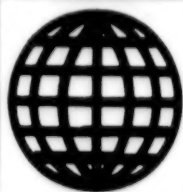


JPRS-TEN-93-021
23 August 1993



**FOREIGN
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JPRS Report

Environmental Issues

Environmental Issues

JPRS-TEN-93-021

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23 August 1993

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Study Reveals Impact of Human Activity on Eco-Environmental Situation

93WN0364 Beijing DILI YANJI U [GEOGRAPHICAL RESEARCH] in Chinese Vol 11, No 4, Dec 92 pp 1-10

[Article by Yang Qinye [2799 0530 2814], Zhang Yili [1 728 7919 9465], and Li Guodong [2621 0948 2767] of the Chinese Academy of Sciences and State Planning Commission Geography Institute: "China's Critical Environmental Situation and Crisis Regions"; manuscript received 25 June 1992, revised manuscript received 24 August 1992]

[Excerpts] [passage omitted]

The geographic environment is a constant and indispensable condition for social development. As society progresses and science and technology develop, mankind's relationship with nature becomes broader and more complex. On the one hand, mankind's reliance on nature and its resource systems is strengthened and on the other hand, mankind's impact on nature is more profound and broader in scope, and many hard to foresee irreversible changes occur that touch upon mankind's destiny. It is precisely due to the increased pressure of human activity on the natural environment that nature's restoration capabilities are gradually reduced, which leads to the degradation of natural components and eventually engenders a series of successive reactions in spatial changes. This environmental deterioration arising from the effects of mankind is certainly extremely unfavorable to mankind's full and rational utilization of natural conditions and natural resources. China is a developing nation, and improving its present environmental situation while it is developing production is a rigorous task that we face. To provide a scientific basis for improving the environment and forecasting future environmental changes, we have compiled the "Map of China's Critical Environmental Situation and Crisis Regions (1:10 million)." This article uses this map as its only basis and focuses on describing China's critical environmental situation and crisis regions arising from the impact of human activity from a macro perspective as a warning to the people of China.

I. The Profound Impact of Human Activity on China's Natural Environment

China has a huge population and a long history, and the depth of the impact of human activity on the natural environment cannot be compared to any other nation in the world. From the earliest of times Yuanmou Man, Beijing Man, Shanding Cave Man, and other ancient peoples have lived on China's vast territory. Agricultural activities, mankind's most important production activity, have a history of about 7,000 years or even longer. China's first relatively reliable statistical data are from 2 A.D., during the second year of the reign of the Western Han emperor Ping Di. At that time, China had a total population of 59.6 million and cultivated land equivalent to almost 0.38×10^8 hectares. Now, China has a population of 1.1 billion and 1×10^8 hectares of

cultivated land and our original natural vegetation basically no longer exists. Traces of human activity can be found in nearly every corner of China. Since the 1950s, with our growing population and progress in industrialization, the impact of human activity on the natural environment has become broader and more profound.

Overall, the impact of human activity in China on the geographic environment can be seen to have had both positive and negative aspects^[1]. On the one hand, it has transformed and utilized nature, made contributions, and made achievements. For several 1,000 years generations of China's working people have hacked their way through brambles and thorns and worked assiduously at cultivating land in reclaiming most land resources in China suitable for farming and turning them into farmland. The reclamation and cultivation index in many places is as high as 50 to 60 percent. Furthermore, they have made full use of the land's fertility and improved the land itself in many places. Some very good examples are the paddy rice land south of a line from Qinling to the Huai He that comprises over 25 percent of China's total cultivated land area and the formation and development of oasis soils in the barren desert regions of northwest China. China is the source land for many crops as well as an important producer of many crops. We also have a long history and abundant experience in the area of domesticating and utilizing wild animals. Irrigation of farmland began earlier than 700 B.C. In China's ancient agricultural society, water conservancy was often an important part of running the country well and giving people peace and security, and it spurred the development of ancient civilization. On the other hand, human activity in China has also had many negative impacts on the natural environment. Foremost among them is that indiscriminate reclamation, grazing, and cutting has caused expanded destruction of vegetation and soil erosion in many regions. A prominent example is the loess plateau and adjacent regions, which were the earliest sources of agriculture in China. The area of soil erosion there with a soil erosion modulus greater than 500 tons/km² is about 338,800 km² and it has become one of the most serious soil erosion regions in the world. The second thing is irrational land use in arid and semi-arid regions, which has accelerated the pace of desertification. In a region covering about 200,000 km² in the Ordos Plateau and surrounding region north of the Great Wall, the desertified land area exceeds 118,000 km² and it is continuing to expand toward the southeast^[2]. Third, irrational irrigation has created or exacerbated secondary salinization of the soil. Secondary salinization and alkalization of the soil exists to varying degrees on over 6.7 million hectares of farmland in China and the ground surface in the most seriously affected areas often has a thick saline crust where even a blade of grass cannot grow. Fourth, many animal and plant species are extinct or facing extinction in the natural world. Contamination and destruction of the natural environment by the development of modern industry deserves special mention. In the loess plateau and adjacent regions, for example, modern industry has

caused new soil erosion as well as serious environmental pollution. During the first-phase project at Shenfu-Dongsheng Coal Field, for example, the amount of erosion increased by about 62 million tons and the second phase project may increase it to 84 million tons, which are, respectively, 1.7 times and 2.3 times the original amount of erosion^[2]. Large amounts of solid wastes, mainly powdered coal ash, coal gangue, and mining overburden have become one of our acute environmental problems. The problems arising from atmospheric pollution caused by backward combustion modes and pollution of rivers by the discharge of waste water are complex and serious. In summary, development of construction activity is accelerating and intensifying the impact of human activity on the geographic environment and its feedback. Since the 1950s China has adopted certain important measures in an effort to expand or increase the favorable aspects of the impact of human activity on the natural environment and reduce or avoid its unfavorable impacts. However, for various historical and other reasons, while in the macro sense there have been some local improvements in China's current environmental situation due to the efforts of many areas, the negative effects of human activity are extremely profound and broad and overall there is still degradation, environmental problems and ecological destruction now pose serious threats to our economic and social development, and the prospects are worrisome.

II. Compilation of the Map of China's Critical Environmental Situation and Crisis Regions

The 1:10 million Map of China's Critical Environmental Situation and Crisis Regions reveals China's present critical environmental situation and shows crisis regions. Everyone knows that "crisis," "degradation," "critical," "threatening," "instability," and other concepts and terms often appear in discussions of environmental problems. However, their definitions are extremely unclear. The "critical environmental situation" referred to in this article includes the affected ecological systems and the human system itself as well as the type, speed, extent, and other properties of system changes. The impact of excessive human activity on ecological systems affects the threat to ecological diversity and the forces of production, and has unfavorable effects on the human system including mankind's health, prosperity, quality of life, developmental stability, and so on. For this reason, during the map compilation process, the scientific information that we attempted to portray was: 1) The natural population bearing capacity of different landscape categories and geographic systems and regions; 2) The pressure of human activity on the natural environment, irreversible changes and losses of restoration capabilities of the natural environment, and the causes, characteristics, scale, and intensity of critical changes; 3) The sensitivity of the natural environment to human interference and socioeconomic weaknesses; 4) The outcomes from the impact of human activity on the

natural environment and the responses created by their interaction with the natural environment and social factors.

Assessment of critical environmental situations (or single environmental problems) mainly involves considering two aspects: the extent of mankind's application of technology and the degree of stability of the natural landscape. In other words, evaluating (or establishing) critical environmental situations and a particular environmental problem (those that are due to a single factor) first of all involves analytical comparison of the land utilization situation of industry and technological applications and population density, which are reflections of the impact (or pressure) of human activity. Second, it starts from the perspective of regional geographic research and conducts comparative research of previous outcomes with the environmental and resource situations and the environmental population capacity, which is a reflection of the degree of stability of the regional environment. Both of these are essential.

The pressure of human activity on the environment has different outcomes under different land use circumstances. We now will use the weighted average of different land categories in terms of population distribution density and consider the degree of the impact of technology to estimate the amount of the pressure. The pressure of human activity is divided into seven grades: minimum, very low, low, average, high, very high, and maximum. The corresponding indices are < 2, 3-4, 5-7, 8-10, 11-13, 14-16, and 17-2 [as published]. Among them, < is no land utilization and a population density less than 1 person/km²; 3-4 is a natural protection region with a population density of less than 10 persons/km² or natural grasslands with a population density less than 50 persons/km². The other categories are extrapolated from this.

We did comprehensive analysis of 22 eco-environmental problems or elements (factors) to evaluate environmental changes in a particular region and the degree (or intensity) of mankind's impact on the natural environment destruction process. The 22 eco-environmental problems or elements (factors) that we selected can be divided into several groups such as consumption and degradation of water and land resources and vegetation resources, negative impacts by human engineering activities, environmental pollution and destruction caused by the development of modern industry, and so on. All of them are to a substantial degree reflections of the "negative" effects of human activity.

Based on the concept of critical environmental situations outlined above, the standards and indicators used to describe a particular eco-environmental problem or element (factor) are determined according to the degree of their impact on human health and the environment of existence, the degree to which they cause the reduction or exhaustion of natural resources, or the degree to which they cause changes in a single natural landscape or the extermination of species. Each problem or element (factor) can also be further divided into different grades

like high, moderate, and low. Regarding soil erosion, for example, based on the regulations for compilation of our National Soil Erosion Map, soil erosion is divided into six grades whose corresponding indices are listed in Table 1. We combined I, II, III, IV, V, and VI into three grades. The 22 eco-environmental problems or elements (factors) that we selected and their concrete indicators will be discussed in detail in another article. Through comprehensive analysis,

we divided the 22 environmental problems or elements we selected into three categories: extremely critical, critical, and moderately critical, which correspond respectively to a serious threat to human health and the environment of its existence, exhaustion of natural resources, and degradation of the natural landscape. However, there was intersection of the low grade in the category above and the high grade in the category below. The categories of critical eco-environmental situations are listed in Table 2.

Table 1. Classification of Soil Erosion

Erosion grade	Number	Erosion modulus ($t/km^2/a$)	Depth of erosion (mm/a)
Minute erosion	I	< 200, 500, 1,000	< 0.16, 0.4, 0.8
Light erosion	II	200, 500, 1,000-2,500	0.16, 0.4, 0.8-2.0
Moderate erosion	III	2,500-5,000	2.0-4.0
Strong erosion	IV	5,000-8,000	4.0-6.0
Extremely strong erosion	V	8,000-15,000	6.0-12.0
Acute erosion	VI	> 15,000	> 12.0

Table 2. Types of Critical Eco-Environmental Situations

Type of Critical Situation	Extremely critical (very critical)	Critical (critical)	Rather critical (rather critical)	Normal
Eco-environmental problems or elements (factors)	Atmospheric pollution	Overloading of groundwater	Flooding rivers	
	Surface water pollution	Surface water exhaustion	Land desertification	
	Groundwater pollution	Over-cutting and degradation of forests	Soil erosion	
	Acid rain	Grasslands degradation and reduction in livestock carrying capacity	Secondary soil salinization	
	Offshore seawater pollution	Exhaustion and reduction of fish resources	Land degradation	
		Seawater intrusion	Wind erosion	
			Karst	
			Freezing	
			Geological and geomorphological disasters	
			Degradation of natural protection regions	
			Existence of severely dangerous environmental objects	
Outcome of the comprehensive actions of ecological elements or problems	Serious threats to human health	Exhaustion and degradation of natural resources	Degradation of natural landscapes	No apparent ecological problems or elements (factors)

From the Land Utilization Map and Regional Natural Geographic Characteristics Map we derived a basic sketch of eco-environmental regions and overlaid them on the selected eco-environmental problems or elements to derive the basic sketch elements for the Critical Environmental Situation and Regions Map. The same sketch usually has several eco-environmental problems or elements that are expressed symbolically. The strength or weakness of the critical extent expressed by each sketch element was determined according to the maximum other eco-environmental problems or elements that constitute this sketch element.

III. China's Current Critical Environmental Situation

The first Critical Environmental Situation and Crisis Region Map (1:10 million) that was compiled in China based on the concepts, principles, and methods described in the preceding section reflects aspects in five areas: regional differences in the natural environment, environmental problem indices, the most threatened environmental impact objects, the boundary lines of certain negative natural ecological factor distribution regions, and the primary natural protection regions and

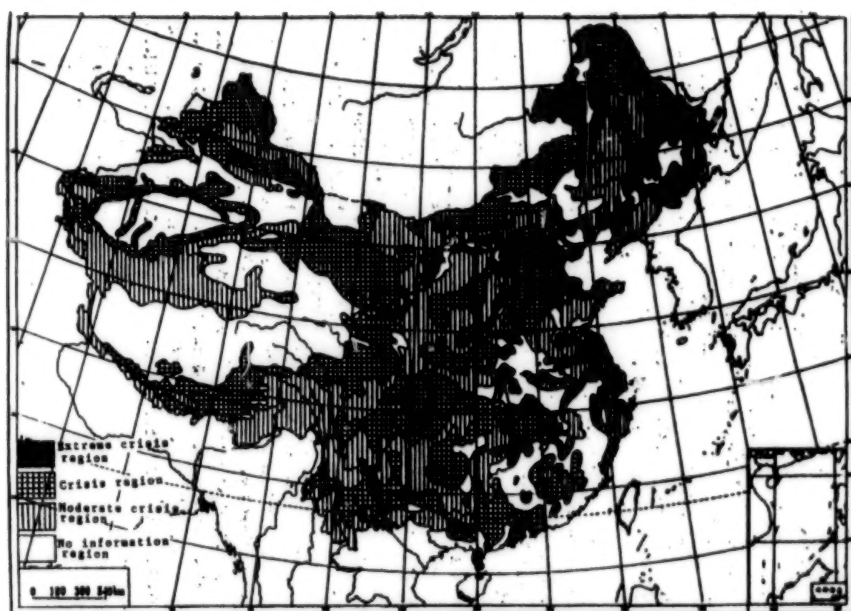


图1 中国生态环境脆弱区和危机区分布
A sketch map of critical ecological situation areas of China

critical ecological situation regions. We will now integrate with China's natural environmental characteristics (that have already been profoundly affected by human activity) for a brief description of China's critical environmental situation as reflected in Figure 1.

On a national scale, there are about 100 eco-environmental extreme crisis regions of varying sizes whose distribution is concentrated in the eastern half of China. They are primarily semi-moist regions, regions that are undergoing a transition from semi-moist to semi-arid, and regions with developed modern industry and concentrated populations. Over one-half of the total number are distributed in semi-moist regions and regions that are undergoing a transition from semi-moist to semi-arid. Most of these regions are located in a transitional zone moving from China's coast toward interior and lowland regions and toward high mountain regions. Their natural environments themselves are extremely critical and they are extremely sensitive to all types of natural changes and human interference. After the intensity of human activity surpassed their bearing capacities and elastic self-regulation limits, their critical eco-environmental situations became even more prominent. Most of these regions are also in economic regions of China that are "old revolutionary base areas, minority nationality

areas, frontier regions, and poor regions," so it can be said that poverty coexists with ecological crises there. Less than one-half are distributed in regions with developed modern industry and concentrated populations, and they fall mainly within the scope of the southern moist sub-tropical zone. These regions have lush forests and relatively superior natural conditions, but they have still joined the ranks of regions with extreme eco-environmental crises, which is a full reflection of the pressures of human activity, especially the direct and profound impact of modern industrial production, on the ecology and environment. At present, China has $1,000 \times 10^4$ hectares of cultivated land that is polluted by industrial "three wastes" [waste water, waste gas, and industrial residues], and most of it is in this region.

China has roughly 270 eco-environmental crisis regions and about 70 percent of them are distributed in northern China north of a line from Qinling to the Huai He. The causes of the eco-environmental crises are complex. This is especially true of the North China Plain and the northwestern corridor and Xinjiang in the northwestern China arid region. Because of differences in environmental problems or factors, the areas covered by each of the eco-environmental crisis regions are not that large.

China has about 90 moderate eco-environmental crisis regions that cover a larger area, but the problems or factors that cause eco-environmental crises are more alike. They tend to be distributed more in the plateau and mountainous regions of western China than in the eastern plains, and there are more of them north of Qinling-Huai He than south of Qinling-Huai He.

From a comprehensive look at China's eco-environmental crisis situations, vast areas of the eco-environmental crisis regions are related to large-scale agricultural production activities in the larger sense. This is closely related to the long history of agricultural development and frequent human activity. Although industrial production activities have a shorter history, their environmental impacts have already formed the basis for the appearance of extreme eco-environmental crisis regions. This is particularly true of the very serious situation in regions with urban concentrations on the east China plain where pollution problems from township and town enterprises continue to grow and a trend toward degradation of the ecological situation in the suburbs of cities has appeared.

The eco-environmental crisis situation in western China is apparently not as serious as in eastern China. This is due mainly to the weaker impact of human activity. In fact, because of the impact of human activity, the margins of the Qinghai-Tibet Plateau, the Hexi Corridor in Gansu, and the oases of Xinjiang have gone from being moderate eco-environmental crisis regions to crisis regions and local areas have also become extreme crisis regions. It can be expected that in the future as our population grows the pressures of human activity will increase and eco-environmental crises may also become stronger. Thus, measures should be adopted quickly in these regions to take preventive action. The ecological crisis situation in the eastern half of China to the south of Qinling-Huai He would seem to be not as serious as north of Qinling-Huai He, which is related to environmental capacity. However, as described before, because of the development of industry the environmental crisis problem cannot be ignored.

There are also very significant differences in eco-environmental crisis situations in our different provinces and autonomous regions. With the exception of a portion for which we lack information, overall the eco-environmental crisis situations in Zhejiang, Fujian, Anhui, Tibet, Xinjiang, and Qinghai are not at the critical level, but there are different reasons for this in each case. Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Hainan, Yunnan, Jiangxi, and Taiwan are at the moderately critical level. Heilongjiang, Inner Mongolia, Shaanxi, Gansu, and Guizhou are at the critical level. Jilin, Liaoning, Hebei, Shanxi, Ningxia, Sichuan, and Jiangsu are at the extremely critical level.

The results above were derived using data from the late 1980s. As pollution control levels have improved and ecological construction has been strengthened over the past several years, changes may certainly occur to varying degrees in the situations. Of course, several new problems might also appear in certain regions. [passage omitted]

New Technology To Curb 'White Pollution'

93WN0418C Beijing RENMIN RIBAO OVERSEAS
EDITION in Chinese 16 Apr 93 p 1

[Article by Liu Xiangdong [0491 0686 2639] and Li Qiuhong [2621 4428 4767]]

[Text] A new technology called periodic ground-cover removal method will effectively reduce the pollution of ground cover residue. This technology has passed the assessment of experts organized by the Hubei Provincial Science and Technology Committee.

Because agricultural ground covers are too thin and too weak, the amount of ground covers left in the soil has increased with time. This so-called "white pollution" has threatened the ecological environment of the farmland. Experts of the Hubei Provincial Ecological and Environmental Protection Station have developed the new technique of periodic ground-cover removal. After 4 years of experimentation and comparison between the periodic cover removal approach and the previous method of cover removal after harvest, the rate of ground cover recovery has increased from 16.5 percent to 54.9 percent. The efficiency has also increased by 50 percent.

Shanghai To Invest 81.7 Billion Yuan in Environmental Protection in 1990s

93WN0418B Beijing RENMIN RIBAO OVERSEAS
EDITION in Chinese 16 Apr 93 p 1

[Article by Zhu Zhongliang [2612 1813 5328]]

[Text] Shanghai, China's largest industrial city, will invest 81.7 billion yuan in environmental protection in the 1990s. The most acute environmental problems in Shanghai now are the pollution of Huangpujiang, a major source of drinking water for Shanghai, and the excessive noise level on Shanghai's main traffic arteries.

Shanghai has made major efforts in recent years to improve its environment. One of the major projects is the merge of Suzhouhe and sewage treatment project that began in 1988 with a total investment of 1.6 billion yuan, including a loan of \$145 million from the World Bank. This project will be completed in 1993. This project is expected to fundamentally change the smelly Suzhouhe and improve the water quality of Huangpujiang. In the meantime the Shanghai Water Supply Bureau has not only moved the water intake from Huangpujiang to beyond the Songpu Bridge, but will also invest a great sum of money to develop a second source for drinking water, which will be taken directly from the Yangtze River.

Shanghai used to be plagued by industrial noise pollution. Since 1986 the municipal government set down strict regulations to control industrial noise and invested several hundred million yuan to this end. The industrial noise problem is now under control, but the entertainment noise has become a new problem. The Environmental Protection Bureau of Shanghai will be working with other departments to formulate specific regulations to improve strict control on entertainment noise pollution.

SINGAPORE**Minister Inaugurates Institute of Environmental Technology**

*BK2807153493 Singapore THE STRAITS TIMES
in English 28 Jul 93 p 36*

[Excerpt] The newly-launched Regional Institute of Environmental Technology (RIET) here will spearhead Singapore's drive to become Asia's environment centre, said Trade and Industry Minister S. Dhanabalan yesterday.

RIET is the first joint project of its kind between the European Community (EC) and the Singapore Government, represented by the Singapore Institute of Standards and Industrial Research (SISIR).

Officially opening the institute, Mr. Dhanabalan, said: "With RIET, Singapore can become the focal point for environmental technology transfer."

"It will be able to adapt, develop, and disseminate environmental technologies relevant to industries in Singapore and the region."

He said there are many business opportunities emerging in environmental equipment and services. Environmental engineering companies can therefore use Singapore, which has become a model of good municipal and industrial management, to develop and expand into the region.

The setting-up of RIET also marks a milestone in EC-Singapore economic co-operation, he added.

Speaking at the opening, RIET Director Dr. Philippe Bergeron said that with Asian countries showing the effects of rapid industrialisation and tightening their environmental laws, the market potential for RIET was enormous. [passage

POLAND

Greenpeace Attacks Investment in Poland

93WN0476C Stockholm DAGENS NYHETER
in Swedish 4 Jun 93 p C 4

[Article by Lars-Ingmar Karlsson: "ABB Gets Harsh Criticism: Greenpeace Condemns Investments in Poland"—introductory paragraph in boldface as published]

[Text] ABB's investments in Poland are often based on both old technology and already written-off equipment, Greenpeace claims in a new report. The company rejects the criticism and says that investments in Poland are not different from those in West Europe.

The Greenpeace report, "Open Borders, Broken Promises," harshly criticizes foreign investments in Poland. This applies not only to ABB's, but in general to all European and U.S. investments.

The foreign investors are only interested in finding the least-expensive environmental problems. The basic structure in the industry with all its polluting factories does not bother them, the report claims. As an example they mention the burning of coal instead of the more environmentally friendly natural gas.

Can Become Out of the Way

Unwillingness to go over to phosphate-free washing detergents is another example of outmoded products and old technology. The burning of environmentally dangerous waste is another. This development is so large

that, according to Greenpeace, Poland is risking becoming Europe's garbage can.

There is an imminent danger that the country will become an out-of-the-way place in Europe where environmental rules are the exception, the report claims, quoting Polish environmental organizations.

ABB was targeted for a special investigation, because the company itself stresses its environmental friendliness so strongly. But Greenpeace thinks that this is all too often empty talk and brings up several examples:

Environmentally dangerous chlorine compounds are used to manufacture pipes. Sand that contains environmental poisons has been dumped in such a manner as to harm the groundwater. Atmospheric emissions exceed the allowed limit twice over.

'Same Demand'

ABB has carefully selected "the jewels in the crown" in buying companies, Greenpeace writes. The company's main interest is to get a rapid return on its investments. The state can keep the most environmentally dangerous companies.

ABB does not agree with this description.

"It is wrong, and it claims that we use old technology or old equipment. We make the same demands on production and products in Poland as we do in other countries," Jan Stermblad, who is one of those responsible for ABB's environmental work, said.

Nor does he agree that ABB selects the "crown jewels." But, he says, we do not buy companies that are so shabby that they need too much investment to get them to fulfill the company's environmental requirements.

HONDURAS

National Congress Approves General Environment Law

93WN0503A San Pedro Sula *TIEMPO* in Spanish
21 May 93 p 5

[Text] Tegucigalpa—The National Congress yesterday passed the General Environmental Act, which prescribes prison terms of from one to 10 years and fines of up to 1 million lempiras for those who commit environmental crimes.

The objective of this law—which contains 116 articles—is the protection, conservation, restoration, and sustainable management of the environment and the natural resources that are of public utility and social interest.

For the purpose of proposing, drafting, and implementing all the measures considered appropriate for the conservation of our natural resources, a National Environmental Office will be created as a decentralized, functional, and administrative unit of the Office of the President of the Republic.

An Environmental Prosecutorial Office, National Environmental Consultative Council, and Technical Advisory Committee will also be created.

The General Environmental Law prohibits the introduction into Honduras of industrial waste, household waste, mud or sludge from sewage, harmful biological substances, radioactive or chemical waste, or any other contaminants.

Industrial installations or any other public or private activity liable to contaminate or degrade the environment must be preceded by an environmental impact study that will make it possible to prevent any potential negative effects.

It should be emphasized that Article 36 forbids the location of any human settlements, military bases, industrial installations, or other facilities in areas where they could impact the water sources of communities or irrigation systems that supply farms producing crops destined for human consumption, if such facilities produce waste which even when treated is a potential source of contamination. Municipalities are empowered to monitor compliance with these norms.

It is an environmental crime to discharge active or potentially dangerous contaminants into the atmosphere, ocean, or rivers or to contaminate—or allow to be contaminated—foods or beverages.

It is also an environmental crime to manufacture, store, import, sell, transport, or use toxic substances or products—or contaminants—that are harmful to public health or to ecosystems in general.

The penalty established for the commission of the above crimes is imprisonment for a term of from one to 10 years.

Fines ranging from 1,000 to 1 million lempiras are also established for persons who are guilty of administrative infractions that constitute acts of commission or omission in violation of the plans for the regulation of natural resources or in violation of any other regulations or orders issued by the appropriate authorities.

The following are also construed as administrative infractions: Preventing or impeding inspections or verifications conducted by the appropriate authorities; attempting, by whatever means, to induce said authorities to incur in error; submitting false data to said authorities; engaging in activities that have the potential to contaminate or degrade, without obtaining the appropriate licenses or permits; and hunting or capturing—for commercial purposes—protected species of wild animals.

Congress Creates Ministry of the Environment

93WN0503B Tegucigalpa *EL HERALDO* in Spanish
21 May 93 p 2

[Text] Although the administration of Rafael Leonardo Callejas says it is making an effort to reduce the government bureaucracy, it increased that bureaucracy yesterday by creating a Ministry of the Environment.

This new Secretariat of State has been established under the Environmental Act that was passed yesterday following the third and final debate in the National Congress.

The bill was introduced last year by Nationalist Deputy Donaldo Reyes Avelar at the request of the National Environmental Committee (Conama).

The committee that drafted the bill had recommended that—instead of a cabinet ministry—an Environmental Office be created under the Office of the President of the Republic.

The bill's authors believe the creation of a new ministry is not justified because it means increasing the bureaucracy, contrary to the Calleja administration's policy of downsizing the governmental establishment.

During the debate, however, the vice president of the Congress, Roberto Alonso Matute, explained that it was preferable to create a cabinet ministry, inasmuch as a ministry would have more status and freedom to act.

He also said that protection of the environment is one of the world's priorities today, and that this fact justifies the creation of a secretariat of state for this purpose. This ministry, he said, "will be responsible for complying—and enforcing compliance—with Honduras' environmental legislation; for the overall formulation and coordination of national environmental policies; for monitoring compliance with these policies; and for the public and private institutional coordination of environmental matters."

The new ministry will enjoy all the guarantees and independence necessary to carry out its functions. It will

be headed by a minister and a senior official, and will have the technical departments needed for carrying out the objectives of this law.

It will also have a National Environmental Consultative Council consisting of representatives of the public and private sectors. A technical advisory committee and an Environmental Prosecutorial Office will also participate on the council in an honorary capacity.

"Inasmuch as this Secretariat does not have a direct executive function, it will operate with a minimum structure, and its executive, technical, and managerial personnel will not exceed 35 in number," the new law stipulates, although in practice the opposite occurs.

Twenty-six of the 116 articles that comprise this Environmental Act are still pending, and they will be approved during future sessions of the Congress.

The articles awaiting approval have to do with the integration of the National Environmental Consultative Council, the appointment of the environmental prosecutor, and the inland and maritime waters.

NICARAGUA

IRENA Minister Reflects on Threats to Environment

93WN0498A Managua LA PRENSA in Spanish
13 Jun 93 pp 1, 15

[Speech by Institute of Natural Resources (IRENA) Minister Jaime Incer; first two paragraphs LA PRENSA introduction]

[Text] The space customarily devoted to the Sunday interview is taken up today by this article by Dr. Incer. It is a summary of his speech before the Legislature on our nation's ecology problem.

Jaime Incer has for many years been the best-prepared and most tireless fighter in the defense of our environment, a wise man not only because of his knowledge, but also because of his direct experience with the process of ecological destruction. We are certain that his report will have a great impact on the ever growing wave of young people concerned with the destruction which their national heritage has suffered and continues to suffer in all spheres. The following are the words of Dr. Jaime Incer, minister of IRENA:

As we celebrate the Week of the Environment, it is important that we as a nation reflect upon the ecological scenario in which man, plants, and the animals evolve and in which we value clean air, pure water, sunlight, fertile soils, life, development, resources, and well-being. Nature will continue to bestow these things upon us if we, as sensitive and sensible Nicaraguans, learn to use them with greater rationality.

Ecology is the science of the right to survival shared by man and all living beings that inhabit the planet, but it is also the science of producing and replacing, in order to

use today while keeping for the morrow and based on a vision of sustainability while thinking about future generations.

As conscious Nicaraguans, we must recognize the need to maintain our own environment, not only in order to fulfill an obligation that we share with mankind, but also because we have in the past and present suffered from great ecological destruction that has dried up rivers and lakes, driven away rainfall, eroded soils, eliminated forests, sacrificed fauna, and polluted the world around us.

Without a sound ecology, there can be no sustained economic development, much less social well-being. After all, farm production, the generation of power, public health, and, above all, the quality of life of our fellow citizens will depend on how we use the natural resources and ecosystems provided by our geography.

We now number some 4 million inhabitants who are trying to develop the country and make the most of the benefits and products which nature offers us. In trying to achieve these goals, we must overcome the near-sightedness that has propagated such a dependent and vulnerable model for development of the country's socioeconomic circumstances that it has nearly been lost. We have abused the natural resources and environment in a destructive, polluting fashion that has pointed up the contrast between our condition as a nation rich by nature, but indigent as a society and caused us to be poverty-stricken while living in paradise!

Water Most Prized

Of all the resources that nature has given Nicaragua, water is unquestionably the most prized and the most in demand, but also the most poorly taken care of and wasted. We live in an era of limits and we cannot continue to destroy our sources of water, in quality and quantity, with an impunity to which we are led by the absence of a water code that would serve as a restraint and govern our actions so that we use this undeniable resource of mankind with more rationality.

We must implement a program of national scope to restore improved use of our water in a shared rather than a competitive way. This implies rational management of the entire system of hydrological basins, planning and implementing better use of the land, and preventing erosion and the transporting of soil that in the final analysis muddies rivers, lakes, and seas and compromises other uses of this very vital resource.

Pollution and Health

The effort would not be completely effective if, in addition to ensuring an adequate supply of water, we did not also guarantee its quality. Without being an alarmist, I want to point out something of which we are all aware: Like a veritable national epidemic, the pollution of our water sources is reaching intolerable limits that are incompatible with the nation's health and development. We must change the health habits of our impoverished

society and prevent the gradual destruction of the ecological systems that guarantee the production of water. Tomorrow will be too late.

What good will it do to have more doctors, medicines, and hospitals if 90 percent of our endemic diseases enter by mouth via the ingestion of polluted water or food contaminated by it? Or must we resign ourselves to being a sick people as the result of living in a country suffering from chronic ecological unhealthiness?

Saving Lake Nicaragua

If concern is currently focused on recovering Lake Xolotlan or the country's lagoons and rivers, we must make an even greater commitment to save Lake Nicaragua, which has already begun to feel the polluting effects of agricultural, industrial, and urban activities in the surrounding area, to say nothing of the alarming erosive processes that fill it with mud from both Nicaraguan and Costa Rican rivers flowing into it.

If the drastic climate changes which the planet, region, and country have experienced in recent years continue, Lake Nicaragua will be the last oasis on which our development will depend. This great lake, on which we have turned our backs in the past, continues to be our best resource for the future.

Forest Destruction

The current use of Nicaraguan territory has been oriented toward developing the potential of the soil in order to encourage a traditional economic model. It has been based on the production of a few types of farm products for export, with little or no consideration given to a balanced environment.

Many examples show that the actual use of soils in Nicaragua has not been in keeping with their best potential use. Further, our forests have been neglected or eliminated even though they offer better economic prospects than any of the traditional crops. This lack of proper forestry has also resulted in the deterioration of other resources such as soil and water, the loss of lagoons and rivers, the gradual disappearance of flora and fauna, a decline of fresh water fishing, and finally, destruction of the natural landscape as a potential environment for attracting receptive tourism. In nature, everything is subtly linked.

The Forests: Ownerless and Priceless

Given the fact that the forests are not valued as a highly productive resource and since there is no precise definition of who has the right to possess or use them, there has been a growing trend toward their destruction. This is the reason for the cutting and burning of 125,000 hectares of forests every year, with all the tragic ecological consequences that such practices entail.

We still have 4 million hectares of commercially exploitable forests left, provided we apply technologies permitting their management in a sustainable fashion and their continuous replanting. Unless we guarantee both actions, it is better not to offer forest concessions so as to

avoid a repeat of past mistakes. I would even dare to affirm that, given the widespread concern throughout the world over the loss of tropical rain forests and the role which the latter play in taking in carbon dioxide and releasing oxygen, the trees will soon be worth more standing than cut! Nor am I engaging in futurology!

Nicaragua has set aside some 2 million hectares for conservation, declaring them protected areas. Nevertheless, they are continually threatened by illegal settlement around the edges, settlements which for the time being have no other alternative than to cut and burn the woods just to subsist. Paradoxically enough, the Pacific and Central regions have vast stretches of good farming or ranch land that is totally untouched!

Fuel

Another serious problem is posed by rural people living near the cities, for they are virtually turning the last dry tropical forests into fuel in order to meet domestic demand during these times of energy crisis. The situation is so extreme that even the trees lining our streets are not safe from the devastating action of machetes and chain saws.

How long will our forests continue to make up for the energy shortage, supplying 55 percent of all energy consumed directly, vs 35 percent for imported hydrocarbons? If we continue to devastate our woods for the next 20 years until they are gone, we shall not have a right to complain about the lack of water in rivers, lakes, dams, and wells, or to continue begging Providence for more rain! Nature is not vengeful, but its prodigality does have its limits. One must work with, not against it.

Even worse than the cutting of wood for national consumption is the fact that 80 percent of the pruning is done by landless peasants, those who were given the land but minus any restrictions on destroying the forest. Poverty is the worst enemy of ecology, even though the loss of ecology engenders more poverty.

National Ecology Patented

Despite all the abuses and wrongheaded economic policies that have ruined vast expanses of natural resources in the past, Nicaragua still has an extensive variety of tropical ecosystems that remain intact with a great multitude of species, giving the country its value as a country of high biodiversity because of its position as an isthmus and its tropical nature.

The abundant species of flora and fauna offer unsuspected possibilities for their pharmaceutical, industrial, or ecotourist use if we succeed in studying and appreciating them before we destroy their ecology. That is why President Violeta Barrios de Chamorro signed the Agreement on Biodiversity at the World Conference on the Environment and Development held in Rio de Janeiro exactly one year ago, an agreement that will allow us to patent and use that as-yet unknown natural potential as a right.

Based on such a vision, the government has established extensive natural reserves and other protected areas in Bosawas and Rio San Juan. They mainly contain tropical rain forests which, along with other officially declared protected areas, comprise 17 percent of the national territory, the largest such area in Central America based on the number of hectares devoted to conservation.

Conservation of the country's rich fauna is closely related to its vegetation, meaning that it has declined as we have sacrificed our forests or altered ecosystems where food, refuge, and breeding grounds are found. There is also pressure on certain species in demand nationally because of dietary preferences, irresponsible hunting, or domestic captivity.

Even more serious is the commercial exportation of species in the process or in danger of going extinct. Even though international quotas have been set for every species and country, certain species are still exported illegally, taken from their natural environment in order to avoid the trouble of breeding and raising them in captivity, which would be the proper thing to do. We must emphasize the urgent need to establish regulations resulting in relentless control of illegal activities that are out of season or against existing bans so as to provide effective protection and care for the few wildlife refuges established in the country or establish more of them.

Dispute Over Profit

In connection with this issue, the lack of organization and capriciousness with which marine fishing resources have been managed are a matter of concern. Such resources are exploited as if they were an inexhaustible gold mine, which generates complaints and disputes and fails to give priority to the problem of international pirating now invading and looting our territorial waters with impunity.

I also want to call attention to the fact that of the 350 species offering economic potential, the national fishing industry concentrates on the intensive working of only two: shrimp and lobster. Even in these cases, they fail to respect size, sex or method, all of which combines to furnish a dramatic example of the erroneous orientation toward action deliberately aimed at fast and easy profits and devoid of any consideration for the ecological environment or cycles that would guarantee the future restoration of the fishing resource in a sustainable fashion.

The government has declared the Miskito Keys [Cayos Miskitos] as a Biological Marine Reserve (definitely the most extensive in the Caribbean) in order to protect that great natural breeding ground for tortoise, coral, fishes, mollusks, and crustaceans, which find their maximum reproductive and feeding opportunities in the archipelago and nearby submerged reefs.

Pollution by Phases

One ecological problem already impacting the country is the gradual pollution of the land, water, and air, a situation that started in urban areas several decades ago with the irresponsible dumping of domestic waste water

in water sources, combined with the dropping of fecal materials in open areas. Such practices are the product of poverty and cultural ignorance, which have such a harmful effect on the health of the country's lower-income groups.

A second phase of pollution began with the uncontrolled use and abuse of insecticides and fertilizers. The application of formulas, banned in other countries because they are dangerous, found in Nicaragua a testing ground favorable to the production and dispersion of these agricultural chemicals so harmful to the health of inhabitants lethally exposed to their continuous applications.

The heretofore unregulated activities of certain agroindustries are also responsible for pollution resulting from organic waste such as coffee pulp, rice husks, sawdust, waste pulp from cane, and other materials that pollute both soil and water. We need regulations to govern the processing or recycling of such waste and neutralize their polluting effects when they are dumped into the natural environment and atmosphere.

Mining activity has also taken its lethal toll with the poisoning of rivers, as in the case of the Bambana and the Rio Mico, to cite but the most dramatic national examples.

The sight of mounds of urban garbage, most of it nonbiodegradable plastic materials, is now commonplace in vacant lots and along our highways. Managua seems to be winning the title of "Garbage Capital of the World."

A greater threat faces the country if we allow investments aimed at introducing municipal garbage dumps and importing undesirable waste from industrialized countries to be processed, burned, or buried in Nicaraguan soil.

I do not even want to think about the drastic effects which the germs present in hospital waste would have on the people's health: AIDS-infected hypodermic syringes; radioactive substances that remain in the soil to be absorbed by grass, cows, milk, and children; heavy metals released by certain products such as batteries, oil, and paint thrown out as garbage, all polluting the soil and water and causing congenital defects or cancerous tumors in the unfortunate Nicaraguans who drink such contaminated water, ingest vegetables or food of animal origin from land where such facilities are found, or who live near such accursed places.

Presidents from the region have agreed not to lend Central American territory for such harmful investments and to establish regulations to avoid the production, dissemination, and transit of dangerous substances on the isthmus. Nevertheless, we must not let down our guard because the temptation is great and the danger ever present.

I hope these concerns will be heeded this time and not left as options for a future that may never come. Our development is so backward that we do not even have an environmental code making it a crime to burn our

forests, pollute our water, dynamite rivers, exterminate our fauna, and continue other foul traditions that compromise the future or, even worse, that of our children.

We in this country must learn that good conservation begins with a search for viable alternatives of social and economic development that will help the poor rural

people who are so desperately looting our natural resources in such an alarming fashion. It is important to attract the attention of the dispossessed and respond to their most urgent needs with a commitment that will induce them to respect, participate in, and support efforts to preserve the environment for their safety and future.

INDIA

Pollution 'Hot Spots' in Sea Waters Noted

93WN0447A Bombay THE TIMES OF INDIA
in English 20 Apr 93 p 8

[Article: "Study Marks Polluted 'Hot Spots'"]

[Text] New Delhi, April 19 (UNI). Forty hot spots of pollution have been identified in Indian sea waters during intensive monitoring under the auspices of the Department of Ocean Development (DOD).

Some other areas, like the Cochin backwaters and the Ennore estuary, are likely to become highly polluted areas (hot spots), severely affecting the benthic fauna and other bottom feeding organisms, according to the studies conducted under the hot spots monitoring programme.

The 40 hot spots identified are Daman Ganga, Tapi, Mindula, Veraval, Porbandar, Kandla, Mitapur and Dhadar in Gujarat; Malad creek, Bombay harbour, Ulhas estuary, Tarapore, Dharaontar, Reddi, Bassein and Malvan in Maharashtra; Mandovi and Marmugao in Goa; New Mangalore Port Trust and Karwar in Karnataka; Veli near Trivandrum in Kerala; Ennore estuary, Cudalore port and surrounding areas, Nagapattinam, Arumuganeri, Tuticorin and Point Claimere in Tamil Nadu; Chuunamber river mouth, Karaikal and Yanam in Pondicherry; Visakhapatnam harbour and nearshore areas, Kakinada bay, Gautami-Godavari estuarine point in Andhra Pradesh; Puri, Gopal Port, Subarnarekha river mouth, mouth of Baitharani and mouth of Chilka Lane in Orissa; outfall of Matla river, outfall of Saptamukhi river, mouth of Ganga river extending to lower Long Sands, and Digha in West Bengal.

A study of sources of pollution along the coastal waters revealed that direct discharge of domestic and industrial wastes are confined to few places like Bombay, Madras, Visakhapatnam, Tuticorin and Kakinada. Pollution is caused from inland sources and a certain extent from the banks of estuaries.

When the discharges reach coastal waters, there is a dilution due to interaction of salt and sea water and lack of flushing in certain areas, and the pollutants settle down and get absorbed and accumulated in sediments.

This is clearly evident in Cochin backwaters and Ennore estuary, which are likely to become highly polluted hot spots in due course, severely affecting the benthic fauna and other bottom feeding organisms.

Due to interaction between the sediment and bottom layer, the pollutants gradually find their way into the sea and contaminate sea water and marine life.

The data collected under the coastal ocean monitoring and prediction system (COMAPS) revealed that coastal waters off Porbandar have high levels of nitrite, which is mainly due to discharge of untreated domestic sewage into the coastal waters.

Studies on biomass production and species diversity of sea weeds along Porbandar coast revealed that the species of Sargassum, Turbinaria and Gelidiella have become extinct, possibly due to discharge of effluents from Chloroalkali industry.

The data collected on toxic heavy metals like cadmium and mercury revealed that their levels were as high as in the previous year in the Mahim and Thane creeks of Maharashtra. Benthic population in these areas continued to be very low, indicating that the pollution in the bottom layer remains a matter of concern. However, the coastal waters off Ratnagiri showed no significant levels of pollution.

In the sea off Cannanore, in Kerala, high values of dissolved petroleum hydrocarbon were observed due to intensive operation of fishing crafts. The coastal waters of Kozhikode are affected by fishing activity, timber industry and rayon factory, which discharge effluents into the Chaliyar river. However, there was no evidence of severe impact of discharge of effluents, the studies revealed.

The nearshore waters at Veli, near Trivandrum, were found to have high acidity levels, due to discharge of effluents from a titanium factory. Bacterial analysts of water and sediment samples collected along the Kerala coast revealed that sediment samples were more contaminated, particularly in stations like Vizhinjam and Kozhikode, mainly due to the discharge of untreated domestic wastes into the coastal waters.

Mercury was present in significant amounts in the water samples from Kozhikode and Veli. High concentration of copper was also found in waters off Kozhikode, Cochin and Quilon.

The sea water off Tuticorin contained significant levels of mercury and pathogenic bacteria due to discharge of untreated domestic wastes and industrial effluents.

Pollution levels at the Kakinada bay in Andhra Pradesh remained unabated. The industrial and domestic wastes from the Visakhapatnam harbour reach the coastal waters.

The oxygen values at Gopalpur, in Orissa, were very low. The sediment samples showed high concentrations of lead and mercury.

The impact of discharge of wastes was evident from the high values of pathogenic bacteria at Sandheads, in West Bengal. The decreasing oxygen levels at the Matla river mouth, due to discharge of untreated municipal wastes of Calcutta corporation and adjoining areas, have been a matter of growing concern, the study said.

Fears Over Pokhran Nuclear Test Allayed

93WN0483 Bombay THE TIMES OF INDIA
in English 20 May 93 p 5

[Text] Bombay, May 19.

The Bhabha Atomic Research Centre (BARC) said here today that the Pokhran peaceful explosion (India's

atomic bomb project) 19 years ago did not release any radioactivity in the environment.

The prestigious experiment was carried out under the leadership of Dr. Raja Ramanna, described as the father of the Indian atomic bomb project.

Dr. P.K. Iyengar, who played a leading role in the successful experiment, was reported to have stated: "This has to work or the laws of physics are wrong," according to Dr. Ramanna in his book, *Years of Pilgrimage*.

BARC sources today were reacting to a charge made by Mr. Gulab Singh Ravlot of Loharaki village the point closest to the site of the explosion, that scientists never examined the villagers to see if they were exposed to any radiation during the two years they were measuring radioactivity of the air, soil and water.

They said that extensive monitoring of the environment was carried out after the explosion and the measurements did not indicate enhanced radioactivity in any of the samples tested.

"There was no evidence of migration of radioactivity from the site, confirming that there was no radiological impact on the surrounding environment," the sources added.

"The question of any effect on health on the surrounding population as a result of the experiment, therefore, does not arise and there need be no anxiety in this regard," the sources said.

For this programme a group under Dr. R. Chidambaram, at present chairman of the Atomic Energy Commission, worked on the calculations of the yield of the bomb explosion below the ground level.

New Ecological Steps Planned With UK

93WN0446A Bombay THE TIMES OF INDIA
in English 23 Apr 93 p 9

[Article: "India, UK Plan New Ecological Steps"]

[Text] New Delhi, April 22: Indian and Britain have decided to start a joint environmental initiative to bargain for a better deal for developing countries at the forthcoming first meeting of the newly-formed Commission on Sustainable Development (CSD).

The initiative marks a new beginning in the relationship between the two countries, who had disagreed on many crucial issues such as the need for a forestry convention, the bio-diversity and climate change conventions at the Earth Summit in Rio De Janeiro last June.

This significant initiative was formulated after extensive discussions between the minister of state for environment, Mr. Kamal Nath, and his British counterpart, Mr. Michael Howard, at Magog, Canada last week. This is the first attempt between a G-7 (group of industrialised countries) and G-77 (group of environmental developing countries) members to make a common cause on environmental matters.

Mr. Nath announced the details of the initiative yesterday. The British high commissioner, Mr. Nicholas Fenn, was also present.

CSD is expected to be a high-powered body with large representation from developing countries. It will supervise the implementation of Rio summit's decisions on provision of funds to developing countries, and transfer of environment-friendly technologies to poor countries.

The CSD will hold its first meeting next June and a two-day session of environment ministers is also planned to be held during the same time. Britain now agrees with India that the CSD should be vested with political profile so that it can play a catalytic role in ensuring a sustainable mode of economic development in all countries. Till recently, Britain wanted the commission to play a monitoring role only.

On the contentious issue of the need for a forestry convention, both the countries agreed that local communities should be involved in the management of forests. Also, FAO (the food and agricultural organisation of the UN) should be given more responsibilities in forest management.

While India has been a strong opponent of convening a forest convention which it feels seek to globalise the forests, Britain, along with the U.S. campaigned for this at the Rio summit.

The new initiative will press for simultaneous ratification of the conventions on climate change and biodiversity by national governments.

IRAN

Juniper Jungles Declining in Yazd

93LA0096Y Tehran ABRAR in Persian 20 May 93 p 9

[Text] Yazd—IRNA. Of the 60 known types of juniper in the world, six types are on the northern slopes of the Alborz range and the nation's southern and central heights, such as in the province of Yazd.

The only place where juniper grows in this province is the heights of the Bajkan mountain range, 80 km east of the municipality of Bafq.

In the past the forests in this region were partial growths, and because of the failure to follow through and the uncontrolled utilization, today they are found scattered in a limited area of 215 hectares [ha]. The average density of these forests is estimated at about 10 trees per ha.

According to Engineer Dashti, chief of the province of Yazd Office of Pastures, it is quite difficult to restore these trees, and the reason for the survival of the small number of 2,150 trees is the existence of heights that are difficult to cross and inaccessible to human beings.

Polluting Boats, Floating Docks To Be Removed

93LA0096Z Tehran ABRAR in Persian 24 May 93 p 9

[Text] Karaj—IRNA. To prevent pollution of the Karaj Dam reservoir, which provides most of the consumer water for the citizens of Tehran, all unauthorized transit boats and floating docks in this reservoir are being rounded up.

This decision was taken to implement Article 46 of the Just Water Distribution Law and Article 10 of the executive guidelines for implementing the Environmental Protection and Improvement Law.

Yesterday (Saturday) the Municipality of Karaj Environmental Protection Office approved a one-month strike program to collect unauthorized boats and floating docks in the Karaj Dam reservoir, and called upon legal and real persons to report to the Legal Unit of the Karaj Environmental Protection Office on Tuesdays within the designated grace period.

This office announced: At the end of the designated grace period, in accordance with regulations, the collection and removal of unauthorized docks and boats will be done in this reservoir.

REGIONAL AFFAIRS

Interstate Ecological Council Session in Tashkent Detailed

93WN0462A Minsk BELORUSSKAYA NIVA
in Russian 5 Jun 93 pp 1-2

[Interview with T. F. Yanchuk by Aleksandr Andreyev: "Today Is World Environmental Protection Day: If You Are a Creator and a Builder..."]

[Text] The third session of the Interstate Ecological Council (IEC), which was formed in accordance with the Intergovernmental Agreement on Cooperation in the Field of Ecology and Environmental Protection, took place in Tashkent. As is widely known, the IEC was created in July of last year in Minsk, at a conference of directors of environmental protection departments of the countries of the CIS. In an interview with our correspondent, the executive secretary of the secretariat of the Council, T. F. Yanchuk, talks about the results of the work of the third session.

Andreyev: Timofey Fomich, many meetings of representatives of the countries of the CIS take place at different levels. Documents are accepted. They are published. But this does little to excite people: As a practical matter, the decisions are not converted into action. Will the meeting of directors of environmental protection organs in Tashkent be able to break the established tradition?

Yanchuk: Speaking frankly, this is what one would very much want. But, in the first place, decisions must be realistic and closely coordinated with the mechanism for carrying them out. And, in the second place, an array of organizational measures is required for fulfilling them. If one trusts to chance, there will be no positive results at all. Moreover, time is needed. Let us wait a little.

Andreyev: Are you personally in an optimistic frame of mind?

Yanchuk: Of course. The matter, you see, concerns nature, the milieu in which everyone dwells. Don't you think a person strives to live where it is best for him. Moreover, there is growing awareness of the fact that nature and the state of nature almost entirely depend on human activity. And this being so, we must act accordingly. It does no harm to correct, to the extent possible, our mistakes. Our decisions represent a search for the best means of helping nature. That is where the root of my optimism lies.

Taking part in the work of the session were representatives of the UN program for the environment (UNEP [UN Program for the Environment], INFOTERRA [International Environmental Information Network]) and the Interparliamentary Assembly of Member States of the CIS. This was not simply a matter of curiosity. It reflects a desire to join forces in resolving environmental protection problems. My optimism is based on the constructive positions of the delegations from Russia and Belarus, which were demonstrated in the resolution of fundamental questions.

Andreyev: What were the positive accomplishments at the session?

Yanchuk: Members of the Council signed "The Protocol to the Agreement on Cooperation in the Field of Ecology and Environmental Protection," which concerns obligations, rights and responsibilities of the states participating in the agreement.

Decisions were adopted on the creation of working groups of the IEC on ecological monitoring, development of a unified normative-methodological base, problems of protecting the atmosphere from mobile sources, and also on creation of a coordinating group on cooperation with international environmental protection organizations. These were the prime, priority directions the council moved in.

An initiative of the states of Central Asia on resolving the problems of the Aral Sea and the area around the Aral Sea was approved. The issue of the activity of the secretariat of the council, which is located in Minsk, was closely examined. This working organ began to function literally a month ago. I was confirmed as executive secretary of the IEC at the second session in Alma Ata in October of last year. But organizational and financial difficulties did not permit us to fully staff even the not very large staff of the secretariat.

The session broadened the functions of the secretariat, assigning it to organize international cooperation, training of workers in environmental protection organs, and development of information services. Issues of financing were resolved. Financing will be taken care of through equal shares from the member states of the IEC.

Andreyev: Which states took part in the work of the session?

Yanchuk: All members of the IEC. Representatives of the Azerbaijan Republic and the Republic of Georgia took part as observers. We still do not know why there were no representatives from Moldova and Ukraine. Representatives of the Baltic republics had expressed a desire to come, but then changed their minds. Perhaps financial considerations had an effect. The trip to Tashkent is now very expensive.

The session adopted an appeal to the parliaments and governments of the republics of Georgia and Ukraine to join the agreement. The session also called upon the governments of Azerbaijan, Moldova, and Turkmenistan—member-countries of the agreement—to join the protocol on the creation of an interstate ecological council. By the way, Georgia is not a member of the CIS. But membership in the IEC is open to any state.

Andreyev: Timofey Fomich, what particularly pleases you?

Yanchuk: The growing mutual understanding and striving of the members of IEC to join forces for resolving urgent ecological problems, which the conference of the ministries of environmental protection departments of Europe in Lucerne also confirmed.

Nature does not recognize state boundaries. And our striving for unity is palpable. In a word, we are not going to the first anniversary of the IEC with empty hands. The road from Minsk to Tashkent was fruitful.

Andreyev: And what most troubles you?

Yanchuk: The failure to resolve the problems of financing environmental protection programs. Every one of them costs a lot. Take the USA. At one time they so polluted their Great Lakes that the fish began to disappear. Now salmon are again living in them. But about 18 to 20 billion dollars was required for this. Do you think our messed up economy can afford this? But the problems need to be resolved. Future expenditures on protecting the environment, you see, will become much greater. But, in general, the economy depends on the wellbeing of the environment.

Andreyev: It appears that the readers will view your information with interest and understanding.

Yanchuk: Taking advantage of the occasion, I want to congratulate all the workers in environmental protection organs and services on this special day. Truly, it is a special day for all inhabitants of the earth. We are its children. Without it, we will not be able to exist. Nature is not a temple, but a workshop, said a Turgenev hero. I would say that nature is both a workshop and a temple—and in it, a person is a creator, a builder.

RUSSIA

Environmental Disagreement Over Use of Kola Peninsula

National Park Proposed on Kola Peninsula

93EN0591Y Oslo AFTENPOSTEN in Norwegian
1 Jun 93 p 4

[Article by Ole Mathismoen: "Nuclear Storage in North Proposed"—first paragraph is AFTENPOSTEN introduction]

[Text] Russian environmental authorities are making plans to protect Novaya Zemlya while nuclear authorities want to build nuclear storage facilities there.

Russian Deputy Environment Minister Amirkhanov recently told government delegates from eight Arctic nations that his ministry will recommend expanding the present national parks on Franz Josef Land and Novaya Zemlya sometime in 1993. The statement was made at a conference in Fairbanks, Alaska on how to protect plant and animal life in Arctic regions.

But while Russian environmental authorities want to protect parts of the two large islands in the eastern part of the Barents Sea, there are plans to build a larger long-term storage depot for nuclear waste on Soroya to the south. According to information AFTENPOSTEN has received construction could begin as early as June.

Joint Storage Planned

In a recent article in ALTAPOSTEN, Murmansk journalist Vladimir Blinov wrote that plans are ready for a joint storage facility for the North Fleet, the nuclear power plant in Polyarnyy Sorie on the Kola Peninsula and the civilian nuclear-powered icebreaker fleet on Kola. All three have had major storage problems after dumping solid waste in the ocean was halted and the reprocessing facilities in Siberia refused to accept any more spent fuel rods. The temporary storage depots at both the icebreaker fleet's base in Murmansk and at various military bases have been full for some time. There have been big fights between the local authorities in Arkhangelsk and Murmansk over where a long-term storage facility should be built.

It is only a few weeks since the Russian Government established the largest Arctic nature preserve to date on the Taymyr Peninsula.

"The Russians are sending extremely important signals now. This is an important first step toward a joint Norwegian/Russian national park in the Barents Sea," said Dr. Peter Prokosch of the Worldwide Fund for Nature (WWF).

Military Control

At present it is unclear how the Russian Government and military people feel about turning large parts of Novaya Zemlya into a national park. The area is currently under direct military control. Novaya Zemlya is the only area in Russia where any future nuclear test blasts can occur. At least two tunnels for underground testing have already been dug. If the United States decides to resume testing when the temporary ban expires on 1 July the Russian authorities have made it clear that they will quickly start testing bombs on Novaya Zemlya again. In recent decades there have been many bomb tests underground and in the atmosphere over Novaya Zemlya. Solid radioactive waste and old reactors have been dumped in the bays and inlets on the east coast toward the Kara Sea.

At the conference in Alaska representatives from Canada, the United States, Denmark/Greenland, Finland, Iceland, Sweden, Russia, and Norway agreed to step up the effort to establish nature preserves in northern regions. Russia has been the most active in establishing new preserves during the past year.

Experts Disagree on Russian Nuclear Waste

93EN0591V Oslo AFTENPOSTEN in Norwegian
2 Jun 93 p 3

[Article by Ole Mathismoen: "Disagreement Over Russian Nuclear Waste"—first paragraph is AFTENPOSTEN introduction]

[Text] There is great disagreement in Norway over how the nuclear waste storage crisis on the Kola Peninsula should be solved. Bellona is demanding a cleanup.

There was strong reaction to Under Secretary Borre Pettersen's statement to AFTENPOSTEN yesterday that the 25,500 or more highly radioactive spent reactor rods that are currently stored on the Kola Peninsula should be sent to Mayak in Siberia for reprocessing as soon as possible. Reprocessing involves recycling the plutonium in the fuel rods.

Frederic Hauge of Bellona reacted very sharply:

"The nature of Pettersen's statements suggests that he should find himself something else to do. The buildings at the Mayak facility are in such poor shape that both production and storage represent a major danger to the local population. The continued storage of waste in Mayak also involves an increased threat to Norwegian waters. Large amounts of radioactivity have already leaked into the Ob and Yenisei rivers. I regard Pettersen's characterization of local health problems as an internal Russian problem as reprehensible," said Hauge.

Change

He also said that Pettersen's remarks indicate a change in Norway's nuclear policy: "Norway has always been skeptical about reprocessing and has protested against Britain's Windscale and Sellafield programs. If Mayak is utilized the plant will have to be upgraded at great expense. That Norway supports the idea of having nuclear waste removed from our immediate vicinity means that we also support increased plutonium production. Up to now the Norwegian policy has been that there is enough plutonium in the world already. It would be better to spend the money on building a good storage depot for nuclear waste in the north. The Russians have an extremely limited supply of money and there is definitely not enough to both upgrade Mayak and build a storage facility in the north," Hauge said.

On Kola

He thinks the waste should continue to be stored in various locations on the Kola Peninsula until a local long-term storage facility is available.

"There are already 40,000 spent fuel rods in Mayak, stored under poor conditions while awaiting reprocessing. Some 800,000 curies are discharged from Mayak into Karachay Lake annually in radioactive wastewater and the Russians are doing nothing about the enormous local health problems from the nuclear activity in Mayak. Pettersen's statements imply support for the further development of the Russian nuclear industry and will be interpreted in Russia as Norwegian support for Russia's 'nuclear mafia,'" Hauge said.

Repudiated

Under Secretary Pettersen of the Environmental Affairs Ministry, who visited Mayak last week, strongly repudiated the criticism.

"Shipments of spent reactor rods from Kola to Mayak should be resumed as soon as possible. The plant in Mayak appears to be in good enough condition to accept and treat the waste satisfactorily. Mayak still has enough

room to store the waste that is left after reprocessing, even though no permanent long-term storage solution has been found. The most important thing for Norway is finding a solution to the storage crisis on Kola. In the choice between two evils, shipping waste to Mayak pending a permanent storage system in the north is preferable," Pettersen said.

Welcomed

Both Pettersen and his chief, Environment Minister Thorbjorn Berntsen, welcomed the plans for long-term storage on Novaya Zemlya.

"Every step toward getting nuclear waste under control is positive," said Pettersen.

Ole Harbitz, director of the State Radiation Protection Division, who was part of the Norwegian delegation to Mayak last week, agreed with Pettersen that it is better to send spent fuel rods from Kola to Mayak than to continue the temporary storage at various locations on the peninsula:

"It is better in the short run even though it creates a bigger waste problem in other parts of Russia. We were told that Mayak has the capacity to accept waste even though we were not impressed by the storage facilities in Mayak," Harbitz said.

One of the main bones of contention concerns whether large numbers of spent fuel rods that have not yet been reprocessed are stored in Mayak. Harbitz said the Norwegian delegation did not get the impression that there was a large stockpile there. At a recent conference in Alaska on nuclear pollution in the north, Deputy Director Vitaliy N. Lystsov of the Russian Environment Ministry said that 40,000 rods are stored in Mayak and that storage conditions are poor.

Good reception capacity was the decisive reason Pettersen gave for sending the Kola waste to Mayak.

Nuclear Waste Storage Areas Proposed on Kola

93EN0591W Oslo AFTENPOSTEN in Norwegian
4 Jun 93 p 12

[Article by Moscow correspondent Halvor Tjonn: "Russians To Build Storage Depot for Nuclear Waste"—first paragraph is AFTENPOSTEN introduction]

[Text] Moscow has approved the plans for a nuclear waste depot on Novaya Zemlya in principle. It is not known when the facility will be built.

"It is not impossible that construction of a storage depot for nuclear waste on Novaya Zemlya could begin as early as this year. But even so it will take a long time before all the nuclear waste on the Kola Peninsula has been stored securely."

Aleksander Shuvalov, deputy director of the Russian Environment Ministry's press department, made these remarks to AFTENPOSTEN. Shuvalov said that the plans for a waste facility on Novaya Zemlya have been

approved in principle. What remains now is to review the technical implementation.

"Under Russian law the specific technical plans must be evaluated here at the Environment Ministry before they can be carried out. I cannot say precisely how far these plans have come. After we receive the technical plans it will take us two months to go through them. If we find the plans satisfactory construction can begin immediately. I will not rule out the possibility that this will happen before the end of the year."

Shuvalov did not try to hide the fact that this is a difficult and expensive project. As far as he knows a final decision on where the facility will be located has not yet been made. Initially a site on the coast was selected, but an effort is now being made to move the facility farther inland on Novaya Zemlya. It seems likely that the storage depot will be located on Bazhmatchnaya Fjord on the southernmost of the two islands.

In spite of these concrete plans Shuvalov could not promise that all the problems associated with the storage of old nuclear waste on the Kola Peninsula will be solved in the near future. "Removing the ships containing nuclear waste that are anchored in the Kola fjords will cost an enormous amount of money. The condition of these ships makes it impossible to tow them out on the open sea. The only solution would be to seal the waste into secure containers before hauling it away. I cannot say now when this will be done."

Expedition

The spokesman for the Russian Environment Ministry said that the Russians are making steady progress with regard to disclosing past sins in the northern regions. The joint Norwegian-Russian expedition that will look into nuclear pollution in the Barents and Kara Seas this summer has been given permission by the military authorities to visit a fjord in Novaya Zemlya where several nuclear reactors were reportedly dumped. They are waiting for military approval to inspect two other fjords.

The plans to turn parts of Novaya Zemlya into national parkland are still on the agenda. The future fate of these plans depends on how things go with nuclear testing in the island group. Russian authorities will proceed more concretely as soon as the test area is closed. If the nuclear test site is closed there will be no reason to prevent tourists from coming to Novaya Zemlya in the future, in Shuvalov's opinion. Some 1.2 percent of Russia's total territory is national parkland. President Boris Yeltsin has made it clear that the goal is to bring this figure up to 3 percent.

Nuclear Pollution Threat From Plutonium Plants in Siberia Viewed

93EN0590Z Oslo AFTENPOSTEN in Norwegian
1 Jun 93 p 2

[Article by Ole Mathismoen: "No Money for Siberian Nuclear Crisis"—introductory paragraph in boldface as published]

[Text] Norway has confirmed that the nuclear plants in Siberia are in wretched condition, but makes no promise of money.

"Before we ultimately decide to offer economic help, we must have a complete overview of the potential sources of radioactive pollution, and we must make a thorough assessment of the danger. Only after this is done can we contemplate giving aid to sources which threaten Norway and Norwegian waterways," said Borre Pettersen, under secretary at the Environmental Protection Ministry.

Last week Pettersen visited the old atomic bomb factory, Majak, in Siberia together with a group of experts. AFTENPOSTEN recently pointed out that the plutonium plants in Mayak, Tomsk, and Krasnoyarsk represent a significant danger for the northern oceanic regions. Already large quantities of radioactivity have found their way into the Ob and Jenisei rivers, which flow northward. At the facilities, enormous quantities of highly radioactive waste are stored in more or less dilapidated reservoirs, tanks, and lakes. Bellona has shown that large quantities of radioactivity continue to be dumped into the old reservoirs and that radioactivity seeps out via the groundwater.

The managerial staff at Mayak did not hide the factory's history or the condition of its storage facilities. I, personally, did not go out to the most dangerous storage facilities, but I was shown around the facility where spent fuel rods were reprocessed. The factory has ample capacity in terms of production and storage to make a dent in the heaps of spent fuel rods currently piling up in the Kola peninsula. The reason that Mayak has not been taking these is a disagreement over price. "The northern fleet is not accustomed to paying anything," said Pettersen, the first Western politician to visit the Mayak facility in the nuclear city, Tsyelyabinsk 65, which is still closed to the outside world.

Monitoring Stations

Pettersen stresses that the leaks and emissions from Mayak currently do not threaten Norway: "The Irish and Baltic Seas are far more polluted with radiation than the Kara or Barents Sea are today. But in Mayak we saw with our own eyes how serious the potential danger is. For this reason, we have included these facilities into the plan for Norwegian-Russian environmental cooperation, even though the facilities lie very far away from Norway. The Russians are disposed toward a joint building of permanent monitoring stations along the rivers in order to get an overview of what might possibly threaten us. The local Russian health problems I regard as Russia's problem," said Pettersen.

Pettersen is very proud that it was Norwegian pressure which started rival Russian authorities talking with one another about these problems: "Because of the initiative from Norway, people from the military's northern fleet, the icebreaker fleet, the Energy Ministry, and the Environmental Protection Ministry are talking together," said Pettersen.

The Norwegian experts who made the trip to Mayak have concluded that the whole region is so polluted with radioactivity that it should be closed off to humans. The danger of a leak must be eliminated through modernization of the embankments and facilities: "Even so, Norwegian authorities feel the reprocessing facility must be maintained in operation in order to handle the spent fuel rods from Kola and other places. Naturally, we must first be certain the factory is safe and that Mayak finds a solution for its long-term storage problem," said Petersen.

The Press

The under secretary has no problems in defending his acquiescence to the decision of the Russian authorities that Norwegian journalists and environmental protectionists should not be given permission to go along to Mayak:

"If we had insisted upon the request to bring journalists, there would have been no tour. And given the fact that this visit was extremely vital to Norway's interests, the choice was not a difficult one," said the under secretary.

Thirteen Percent of Penza Oblast Polluted by Chernobyl Fallout

93WN0471B Moscow MEGAPOLIS-EXPRESS
in Russian No 21, 2 Jun 93 p 14

[Article by German Titov: "Penza: The Radioactive 'Berries' Are Still Ahead" (The Worst Is Yet To Come)]

[Text] Thirteen percent of the territory of Penza Oblast, and that includes 130 populated points where 130,000 people live, is contaminated with radioactive fallout from the accident at the Chernobyl AES. The contamination is from 1 to 3 curies per square kilometer.

When the Penza authorities humbly tried to remove the contaminated soil from the city and bury it in a ravine near the suburban village of Bessonovki, the local residents in accordance with peasant tradition grabbed pitchforks and axes.

Then the city and oblast fathers turned for help to the capital's scholarly fellows and big bosses in the radiation field. The department chief of the Institute of Applied Geophysics of Roskomgidromet [Russian State Committee for Hydrometeorology], Andrey Ivanov, the chief of the department of radiological monitoring of Roskomchernobyl [Russian State Committee for Chernobyl], Vladimir Savelyev, the chief of the radiological monitoring administration of Roskomgidromet, Nikolay Tsybikov, and the department chief of Glavchernobyl [Main Chernobyl Administration], Georgiy Popov, came to Penza on an observation-clarification visit.

The scientists expressed confidence that the radiation level which had been discovered made it possible to speak of the preferential socioeconomic status of Penza Oblast based on the Law on Social Protection of Citizens Subjected to the Effects of Radiation as a Result of the Catastrophe at the Chernobyl AES. But generally, they said, there was nothing special or terrible going on.

Meanwhile, with the map of the contamination of the oblast's territory with cesium-137 radionuclides compiled with the aid of aerial photographs by specialists of the Moscow Institute of Global Climate and Ecology in their hands, the civil defense representatives together with the workers from the gorzhilkomkhoz [city housing and municipal services office] took away the contaminated soil from Penza to the city-wide dump. A special group of 25 people gathered up the various radioactive "spots" around the city and every daily collected 2-3 truck loads. In order to prove the harmlessness of the earth being recycled, the chief doctor of the oblast center of Gossanepidnadzor [State Sanitation and Epidemiology Supervision Office], Aleksandr Dmitriyev, proposed to haul this soil to his dacha.

Meanwhile, according to data from the Institute of Applied Geophysics, which studied soil samples in Penza, the average density of contamination was 0.97 curie per square kilometer, but about 60 percent of the samples had a radioactive level of more than 1 curie.

In the opinion of the scientists, the contamination that was released over the oblast is local in character. All in all about 100,000 hectares of farm fields were subjected to the effect of the radioactive isotope cesium-137, and that includes 19,000 hectares of meadows and pasturelands. The highest level of radioactive nuclides was detected in the forests and ravines.

According to Georgiy Popov, since chernozem predominates in Penza Oblast, the situation is much better here than, say, in Kaluga, Tula, or Orel provinces.

But Penza residents find little consolation in this circumstance.

Funding Inhibits Protection of Ozone Layer

934D0207A Moscow SEGODNYA in Russian No 25,
15 Jun 93 p 7

[Article by Yuriy Shikhov, under the "The Ecology" rubric: "Russia Cannot Presently Afford the Expense of Protecting the Ozone Layer"]

[Text] The Russian Ministry for Protection of the Environment and Natural Resources, Denmark's Ministry for Environmental Protection, the Danish consulting firm Cowiconsult, and the State Institute for Applied Chemistry and Institute on Problems of the Market of the Russian Academy of Sciences conducted an international seminar 8-9 June on the problems of developing and implementing projects to shift industry over to ozone-protective technologies with the participation of foreign investors. Also present at the seminar was Mr. Brown, a representative of the International Bank for Reconstruction and Development (IBRD).

The problem of preserving the Earth's ozone layer, in view of its thinning out, has been disturbing in recent times to all of mankind. The ozone level is diminishing due to the unwise use of certain gases, among them freon, used in refrigeration equipment and aerosols. When these gases escape into the atmosphere, they

destroy the ozone. Generally speaking, as Russia's Minister for Environmental Protection, V.I. Danilov-Danilyan, stated: "A nuclear war against nature is presently under way," referring to the ecological consequences of certain of man's actions.

In 1985 a number of countries, including the USSR, signed the Vienna Convention, and in 1987—the Montreal Protocol, which proposed ways of effecting transition to the production of ozone-protective refrigerants. These projects are already being implemented today in the West.

But such a program has not yet been adopted by our country—although the government issued Decree No. 379 in 1992, according to which a competent extra-departmental commission on this question was supposed to be set up. But to date this commission has not been established. The program itself, developed by the Ministry for Environmental Protection jointly with the Russian Hydrometeorology Service, envisages a gradual (from 1994 through 2030) termination of the production and consumption of ozone-damaging substances and is assuming, from the estimates of ministry experts, costs amounting to approximately 1 trillion rubles [R] (in current prices) over the course of the first four years. The draft handed over to the Ministry of the Economy must now undergo—in accordance with new approval procedures with respect to the country's priority issues—a dual processing, within an entire listing of such problems, in the Council of Ministers and in the Russian Supreme Soviet.

It is understood that the federal budget will be in no position to manage such an amount of money, which forces our experts to turn to international ecological organizations, in particular to the Global Ecological Foundation. Specialists at the foundation, however, assuming that our economy is transitional in nature at present, would rather invest funds in production facilities of their own choosing, supposing that the rest will then find some way to pull themselves up to that level.

Russian Army Considers Expanded Environmental Role

93WN0471C Moscow IZVESTIYA in Russian
17 Jun 93 p 6

[Article by Viktor Litovkin: "Ecological Defenders Have Appeared in the Russian Army"]

[Text] On 16 June the Association of Military-Political and Military-Historical Research and the international federation of peace and accord jointly with military personnel conducted a round table entitled "Ecological Safety and the Role of the Russian Army in Ensuring It."

The president of the association, Major-General (Res) Yuriy Kirshin, told the IZVESTIYA correspondent that representatives of the public, scientists, specialists, and officers had assembled in order to formulate a uniform policy in the fight against the ecological threat which may become the greatest danger to the life of all humankind in the very near future. And to fight against it we

have to have not only our own experience but in addition rely on international cooperation.

Officer of the General Staff of the Armed Forces of Russia, Colonel Alevtin Yunak, informed me that last year a special directorate which works on problems of ecology had been created in the Ministry of Defense. There are now representatives of the ecological service in the headquarters of the various branches of the armed forces, combat arms, and districts. And there are ecological inspectors in formations and large strategic formations. But for now there are too few of them—250 people, and the tasks are very serious ones.

The soil and territories of test ranges, firing ranges, air fields, tank training areas, warehouses, and arsenals have to be purified of various pollutants. This year alone the military ecologists gathered about 2,000 tonnes of various metallic wastes at the space port in Plesetsk, but only God knows how much of it is at the Kapustin Yar test range, where experiments with missiles and planes were conducted and field firing of air defense troops went on for more than 40 years. And there are Baykonur, Emba, and other large territories which need to be cleaned up, have the data recorded, and returned to normal natural life activity too.

We must recycle around 100,000 tonnes of rocket fuel during the destruction of ballistic and strategic missiles under the SALT-1 and SALT-2 treaties. A component of that fuel such as heptyl is very toxic in nature. And as yet there is no technology to do this. There are the problems of eliminating radiological contamination in the northern and far eastern seas, burying liquid and solid radioactive wastes, and liquidating 40,000 tonnes of chemical weapons. All this requires not only enormous capital but in addition a scrupulous professional approach, reliance on international experience, cooperation with science and the public, and special knowledge.

The army at present is not training ecologists, but they face this challenge in all its magnitude. The round table conducted jointly by scientists and representatives of the public should in many respects help meet it.

Secrecy Hampers Ecology Efforts

934D0183A Moscow KURANTY in Russian 19 Jun 93
p 5

[Interview with Aleksey Yablokov, adviser to the president of Russia on environmental policy and health of the population, recorded by Lidia Lukyanova, place and date not given: "The Cause of Disasters Is Secrecy"]

[Text] Over the next few years the destructive effect of technology-engendered catastrophes on nature and people will be growing. This alarming conclusion was reached by members of the Environmental Policy Council under the President of Russia. Specialists estimated that expenditures on the elimination of ecological disasters will increase from 1-2 percent of the gross national product to 4-5 percent and will exceed expenditures on health care and environmental protection. Aleksey Yablokov, adviser

to the president of Russia on environmental policy and health of the population, is convinced that the main cause of disasters is secrecy.

Yablokov: We hear increasingly often of fires, explosions, toxic product discharges, industrial accidents. One gets the impression that something has burst open and disasters begun pouring on us unimpeded. It actually is true: The veil of secrecy has been removed from such accidents. The causes of technology-engendered catastrophes are now well known: disregard for safety procedures (even as paltry as they are) at all levels; no means of protection and control devices; obsolete technology. In the USSR, however, both the accidents and their causes used to be concealed under the "Top Secret" stamp. Therefore, they accumulated, reached a crisis point, and now are manifesting themselves in numerous disasters. The causes of technology-engendered catastrophes at VPK [military-industrial complex] enterprises still remain secret from the state inspection services. Agencies hold on for all their worth to keeping oversight procedures—both health and technical—in house.

I encountered the problem of the VPK being a state within a state immediately after I was appointed presidential adviser. I have been trying to resolve it for two years. At the end of 1991 Deputy Prime Minister Shokhin held a meeting at which the issues of dangerous Soviet secrecy were discussed directly. Everyone was in favor of a single state health and technical oversight over all production, but there has been no result. Which is depressing. I understand that without the support of the public and the press I will not overcome the agencies' desire to prevent monitoring of their secret productions that are a threat to the population. How many Muscovites know that there are more than 10 nuclear reactors operating in the city in various institutes? Plus another 10 or so in the immediate vicinity of Moscow. The Moscow City Soviet made a good decision—to close the reactors—but none of them were taken off line. What does the population know about the radiation background at their place of work or residence? Most often, only rumors. We are not used to reading special environmental publications; as to newspapers and television, they do not consider it necessary to talk about it until their behinds start burning.

Currently the problem of storage or disposal of highly toxic and radioactive waste is even more acute than that of building new reactors. We almost believe now that specialists are capable of building reactors 1,000 times safer than the one at Chernobyl. But the new reactor must undergo a public expert evaluation; we need to be certain that it is protected both from fools and criminals. Only then will the risk be justified. And the main condition with respect to further development of nuclear power engineering: find out what to do with waste. On top of being an unresolvable problem, it remains under the lock and key of the notorious secrecy.

In all countries (except the socialist camp) this problem has been widely discussed by specialists and the public. Everyone knows where and how radioactive waste is

stored or buried. Also known are the difficulties, and therefore decisions were made consciously. In our country, it is all a secret! Now we have to undo the Soviet legacy: compartmentalization, secrecy, departmentalism. And we are also paying with the nation's health for what was done by our fathers under the CPSU motto: "At Any Cost!"

We decided to build—and built—nuclear submarines at any cost. And what do we do with them after they have served their useful life? (This time has come.) None of these submarines' designers even thought of that. By the end of the century there will be at least 100 such submarines in the Northern and Far Eastern seas. What to do with them—nobody knows. As a scientist, I cannot understand my colleagues who have opened a subject without knowing how to close it.

The same dead-end situation exists with respect to AES [nuclear electric power station] waste. Soviet citizens were taught for a long time to believe that nuclear power stations were indispensable and safe. To the environmental protection advocates' timid question—what to do with the waste?—the answer was: We will solve this problem later! The USSR is so powerful and smart, and the problem is so small compared to the gigantic technical tasks the AES's solve. Do not try to frighten us! And what now?

At a recent meeting of the collegium of the now independent Russian State Committee for Safety in the Nuclear Power Industry, the chiefs of two AES's were asked to answer a question: How are they planning to dismantle idled nuclear power stations? Both said in the spirit of party reporting of the past that they had a wonderful... plan. And it will be... implemented any time now. The two reactors at one of these AES's—the Beloyarsk—was idled 11 years ago. Now these reactors do not produce any electricity, only consume it.

I am not an entirely ignorant person, but I nevertheless did not know that at best it takes an estimated 38 to 105 years between the time an AES is idled and the time one can grow a green lawn in its place. This is the time required to dismantle and neutralize AES structures—and this does not even touch upon the problem of waste.

Perhaps the time has come for me to resign as a presidential adviser?... Such a thought occurs to me, because there are many things I cannot do. I blame myself for not being able to prevent the government from adopting a decision on the development of nuclear power stations. The draft was adopted in an ecologically dangerous version, which is the one that was submitted. Now I am looking for a way to atone for it, but this is just shaking a fist after the fight. That is why I am unhappy with my job. I hope that people will rise locally against building the AES the way it is envisaged in the draft. The government is not being frank when it says that AES's are the only light on the horizon of energy sector development, and that there is no alternative to them. There is! Gas turbines, for instance. They are more effective and safe. Also, it would be good to figure out whether the

country needs additional electric power (which means expensive construction) at all, or perhaps it would make more sense to teach consumers to conserve what we already have. The taxpayers do not know this, either.

We do not know many departmental secrets which affect the environment and which it is criminal to hide from the population. People have the right to know everything about the environment they live in. Here is one more such secret. The builders of communism or socialism, in addition to man-made decaying seas and gigantic but mostly useless hydroelectric stations on great rivers, also created a phenomenon unknown to nature—earthquakes where Mother Earth did not intend to have them. I am talking about technology-engendered earthquakes that already reach 6 or 7 on the Richter scale.

Let us recall the latest national-scale disaster—the accident at a plutonium production plant in Tomsk-7. Highly radioactive waste here is pumped deep into the ground. The people in charge assure us (even now) that the geological structure of the ground is solid and will not allow seepage of waste. That it is plutonium they have never mentioned—a secret! And now I learn that the geological structure of the ground is... classified. Who verified that it is solid and how? The agency itself? The public and state inspection organs have a right to distrust such oversight. I also found out an alarming detail. It turns out that plutonium waste is pumped into the ground under tremendous pressure. Of course, the pressure also increases the danger of the waste spreading out. Specialists maintain that the number of technology-engendered earthquakes is dangerously increasing. At the same time, the state inspection organs—public health physicians, the State Committee for Supervision of Safe Working Practices in Industry and Mine Supervision—do not truly know the technology-engendered situation around Tomsk-7. What if the ground has already shifted?

After the Tomsk-7 catastrophe the president tasked the nuclear safety committee to inspect, regardless of departmental jurisdiction, all nuclear production facilities. I hope this directive will open access to VPK enterprises. I hope, but am not sure, because a previous order of this nature was ignored by the omnipotent agencies.

I understand that the problem of safety of the 10 reactors in Moscow and the problem of storing radioactive waste concerns Muscovites. The institutional reactors' waste is insignificant compared to the waste produced by AES's and the nuclear fleet. Besides, scientists mostly work with radioactive isotopes, whose fission period is between one month and three years, after which they become safe. (Not plutonium, which takes 20-30 centuries to decay.) Therefore, we should not exaggerate the danger. The Radon Scientific-Industrial Association deals with radioactive waste in Moscow and suburban Moscow. They sort and store this waste, but do not bury it in disposal sites as is commonly believed. And, I must say, they handle the storage in a quite civilized way.

The nuclear fleet's waste, on the other hand, which USSR "experts" 20-30 years ago simply dumped in containers in the Kara Sea near Novaya Zemlya, hold unforgettably consequences. Not a single scientific expedition has come close to this secret in all this time. What a vile position! Those who dumped the secret containers into the sea believe that the vacuum seals will last 500 years. But is it so? Last year the military brass turned back a scientific expedition headed for those waters. The latter did manage to take samples of sea water about 50 kilometers from the reactor burial site. No danger has been detected in the surface layer. But the radiation level increases with depth. Is it an alarm bell?

I wrote a letter to the Navy chief protesting their actions. This year two expeditions with the participation of foreign specialists are being readied to go to sites where nuclear waste is buried.

For Russia, the problem of radioactive waste is a heavy burden it has inherited from the USSR. It is impossible to suspend nuclear fleet operations entirely, but at least some order, albeit minimal, has been established with respect to its nuclear waste storage. Solid waste is stored ashore, but there is no place to store liquid waste, so it is dumped at sea. Frankly, this is not a great danger. Three hours after a vessel dumps such waste, no inspection will detect it—the sea dissolves it. But its capacity to restore itself is not limitless. This deceptive and tricky simplicity of solving the waste problem will come back to haunt us generations later.

In terms of the level of **unawareness** of the danger of technology-engendered pollution for nature and health, we are now in the 1940s-1950s. The civilized world believed then that nature by itself would handle industrial waste. The Americans thoughtlessly polluted their Great Lakes. With respect to their ecological awareness, most bureaucrats still live in that period.

Remember the passions seething around the construction of the Katun hydroelectric power station. It was not permitted to be built on the grounds of solid proof that the damage would exceed the benefits. And then what? The chairman of the council and the leaders of the Gorno-Altay republic visited Boris Nikolayevich. And fraudulently convinced him of the benefits of building the station. The president issued a directive to allocate money for its construction.

I realized that the paper Boris Nikolayevich had signed was the result of fraud. He had been deceived! I went to the president... To be precise (I do not meet with him as often as business requires), I told him next time I saw him: You have been deceived. And I proved it. The president turned white; he is a sincere person, that is why I like so much to work with him. Having been convinced of the fraud, Boris Nikolayevich canceled his directive. But it is not always, unfortunately, that an adviser can warn the president, especially in time. And my task is to look ahead.

The substance of the concept of environmental protection can only be the same as in the rest of the world: You

foul up the environment—you pay as much as is needed for society to clean up and restore nature. Compensate for the damage in full! Both to nature and to people's health.

[begin box]

Information on Irresponsibility

According to Russian Academy of Sciences data, each year more than 50,000 people die and more than 250,000 are injured in accidents and catastrophes in the Russian Federation, with the attendant estimated damage amounting to 500 billion rubles [R]. These losses increase on average by 10-30 percent annually.

More than 800 nuclear and 1,500 high-risk facilities are in operation on the territory of Russia. On average, accidents and catastrophes where the damage exceeds R1 billion occur once every 10-15 years. Those where the damage is under R1 billion happen once every eight-12 months, and those resulting in up to R200 million in damages—every 15-45 days.

According to Russian State Industrial Committee data, while overall production declined in 1992 by 18 percent, the total number of industrial accidents increased by 17 percent as compared to 1991. The number of fatalities was 652.

Each year 1,500 uncategorized accidents occur in the chemical and chemistry-related industries, caused by leaks of explosive and hazardous products and resulting in fires, explosions, and discharges.

There were 1,032 accidents and incidents registered in transportation of hazardous cargo on Russian railroads in 1992 as compared to 413 in 1991.

There were 10 major accidents at metallurgical industry enterprises in 1992—twice as many as in 1991.

In Moscow, in analyzing potential consequences of social instability, more than 100 facilities of extreme chemical and radiation risk were identified. Chlorine storage facilities and water treatment stations present potential danger not only to the area where they are located but to all of Moscow. Destruction of 11 scientific research reactors operating in the city may produce consequences comparable to the Chernobyl AES disaster.

In December 1991 a radionuclide source of unknown origin was discovered in the area of the Olympic Complex square near the Prospekt Mira subway station.

On the territory of the Mosrentgen plant in the town of Vidnoye in Moscow Oblast, defective radionuclide sources and contaminated equipment were discovered buried in a nonstandard disposal site. The summary activity measures several kilocuries. The disposal site had been there for about 30 years; the State Disease Control organs and the ministry under whose jurisdiction the plant falls are aware of it; however, no measures to eliminate the disposal site are being undertaken. [end box]

Toxic Dumping Imperils Sura River

93WN0505A Moscow ROSSIYSKIYE VESTI
in Russian 9 Jul 93 p 1

[Article by Nikolay Bulavintsev under the rubric "Reporting in the Issue": "Sura's Dead Fish Catch"]

[Text] Once again the inhabitants of Penza have witnessed a massive loss of fish in the Sura River. They floated to the surface, dead, along a five-kilometer stretch of the river. The fish protection inspection office established that bream fingerlings had been poisoned with saprolegnial fungus. The cause of the illness was serious water contamination from domestic and industrial sources.

This tragedy on the Sura is by no means the only one in recent times. According to the opinion of the chairman of the ecology committee of the oblast soviet, Viktor Bezveselnyy, there are practically no clear rivers and lakes remaining in Penza Oblast. In 1992 185.5 million cubic meters of contaminated and inadequately treated waste water was discharged into surface reservoirs. This year, judging from the forecasts of ecologists, the situation will not improve at all; just the opposite—it will become even worse. More than 100 million cubic meters of untreated waste water is discharged into reservoirs within the city limits in a year. The leaders in this "glorious" business are enterprises of the municipal services system, the Mayak Joint Stock Company, the Plant imeni Frunze, and Penzdizelmash [Penza Diesel Machinery]. And if you add that up to 15,000 tonnes of petroleum products discharged into the water and about 2.5 tonnes of ammonium nitrate are added each year to the run-off of municipal and industrial enterprises, it becomes clear why the water in the river is so black. Even a troglodyte could not exist in the medium which has been created, one called "manmade" and now full of zinc, chromium, copper, and other heavy metals.

The chief state inspector of the oblast fish protection inspection office, Nikolay Korolev, commented on the situation and went straight to the point:

"The water in the Sura River below the city of Penza is now practically dead."

When the material was being prepared for press, another ecological drama occurred in Penza, this time in Kamen-skiy Rayon on the Levka River. After run-off from the oil plant was discharged, fish were again floating to the surface of the river.

Disaster Warning Issued at Krasnoyarsk Plutonium Combine

*LD0707150593 Moscow Mayak Radio Network
in Russian 0250 GMT 7 Jul 93*

[Text] Unfortunately, when one observes certain aspects of our affairs, one is more and more often reminded of the biblical saying that ignorance is bliss. I think you would agree with this assertion, would you not? In the old days, we had no idea that in Krasnoyarsk there was a mining and chemical combine. The enterprise was top secret. Only a very restricted circle of people knew what was done there and how. Nevertheless, the importance of the enterprise and the discipline that was enforced at this extremely dangerous production facility ensured, on the whole, that a level of safety, which could probably be described as adequate, was maintained. Alas, the same cannot be said of this enterprise now, it seems. So, we are broadcasting a warning about the possibility of a disaster. It was issued by the joint trade union committee at the Krasnoyarsk mining and chemical combine, where plutonium is manufactured for nuclear weapons. ITAR-TASS correspondent Yuriy Khots talks about the situation that has developed at the enterprise.

Khots: An appeal to the citizens of Russia and to world public opinion, which has been drafted here, says that thousands of tonnes of highly radioactive waste, giving off hundreds of millions of curies, have been accumulated at the combine during the decades that it has been in operation. This, the equivalent of several Chernobyls, could get out of control.

The Krasnoyarsk mining and chemical combine, which was built at the beginning of the 1950s, was for decades a reliable supplier of the deadly ingredients needed for nuclear bombs. But a new era arrived, and the first reactor was shut down, to be followed by the second. One might have thought that this should be a reason for celebration. However, even a layman can see that it is one thing to stop a car engine by turning an ignition key but quite another to decommission a nuclear reactor. The underground kitchens will have to be watched very carefully for decades—and a simple watchman will not be enough for such installations.

Meanwhile, a highly tense atmosphere has developed among the thousands of people employed by the enterprise. The loss of a rich client, the Defense Ministry, has resulted in reduced revenue. Workers are being paid far less than the level now achieved at many enterprises in Krasnoyarsk, not to mention what miners get. Even so, payment of wages has become irregular. As the trade union committee says, this situation is irritating people and resulting in slacker discipline.

What way out is there from this situation? People here are saying that funds must be urgently allocated to settle the debt owed to the work force. What is more, the combine must be given an opportunity to earn money. It is ready to develop production of super-pure substances, which could rectify the financial situation. Why can the

Ministry of Atomic Energy not share a greater proportion of the profit that the ministry obtains from exports of enriched nuclear materials—and this comes to billions of dollars? In other words, the time has come to act and not to just set up a commission to study the situation. Otherwise, one would rather not think about the consequences.

This is ITAR-TASS correspondent Yuriy Khots with a special report for Mayak.

Ecological Catastrophe Examined

*934E1003A Moscow TRUD in Russian 13 Jul 93 Night
Edition p 2*

[Interview with Vasilii Romanov, deputy chairman of FITUR, by Albert Kozlov, TRUD correspondent; place and date not given: "Will We Disperse the Acid Rains? Scientists Calculate: Thirty Years Remain Before the Ecological Catastrophe"]

[Text] The condition of the environment and the radiation situation on a substantial part of the territory of Russia is characterized today as a disaster. Millions of Russians are forced to breathe air in which the concentration of harmful substances is more than 10 times higher than the permissible limit. The soil around large cities and major industrial centers is contaminated for dozens of kilometers with heavy metals, petroleum products, fluorine compounds, and other toxic substances. To combat these disasters, last year, on the initiative of FITUR [Federation of Independent Trade Unions of Russia], a number of branch and regional member organizations, and the association of trade unions of oblasts that suffered from the Chernobyl accident decided to organize the International Socioeconomic Assistance Fund. Vasilii Romanov, the president of the fund and FITUR's deputy chairman, replies to questions of this TRUD correspondent.

Kozlov: Vasilii Ivanovich, your fund has existed for about a year; however, still not much is known about it and its affairs.

Romanov: Now the structures are being formed, and the directions of the work are being developed. Departments have already been established in Kaluga, Orel, Ryazan, Tula, and Kemerovo Oblasts, in Ukraine, and in Belarus. They are being established in Bashkortostan, Komi, Lipetsk, Tomsk, Chelyabinsk, and other oblasts and regions, first of all with those that are in an unfavorable radiation and ecological situation. The fund has business relations with partners in the United States, Great Britain, India, Argentina, Italy....

Kozlov: What are the main directions in your activity?

Romanov: There are several. First of all, and this is indicated in the name of the fund, rendering all-around assistance to the people who have suffered from the consequences of ecological violations, disasters, and catastrophes, and from radiation accidents. Already being organized are purchases of medicines and medical

equipment and ecologically pure products for the applicable regions, and a program of treatment and prevention measures is being developed. The people must know what the ecological danger is on the scale of the country, region, rayon, enterprise, work station, and apartment. At present, there is complete ignorance here.

The second direction is an increase in the level of the ecological enlightenment of the population: it must control the objective ecological situation around itself—the condition of the air, the water, and the land. The people need information that is reliable and complete. Incidentally, at the request of our fund, specialists of the NPO [scientific production association] Medico-Social Research, Economics, and Information Science (Medsotsekonominform), under the direction of Doctor of Medical Sciences Professor Yu. Komarov, prepared two analytical papers about the condition of the health of the residents of Russia and the pollution of the environment.

The fund plans to instruct people how to protect themselves, their families, and their collectives from ecological danger and to help them equip themselves with protective means.

Kozlov: What, according to the reports of the NPO Medsotsekonominform, is the current ecological situation in Russia, and how is it affecting the health of the people?

Romanov: Scientists believe that, given the present rates of pollution of the environment, an economic catastrophe will ensue within 30-40 years. Already today, more than 60 million Russians live under conditions of gas exhaust pollution and high levels of harmful pollutants in the air. Half of the residents of Russia use water that is of poor quality by sanitary-hygienic standards; 34 of Russia's cities are polluted with harmful substances 10 or more times in excess of permissible concentrations, and the rate of illnesses of the people there is higher than the average level in the country by a factor of 1.5-2. Only 15 percent of the Russian citizens live on territories with permissible norms of environmental pollution. Moreover, the size of these territories is continuously and rather quickly being reduced.

Kozlov: So the ecological protection program is conceptually a program for the protection of the health of the nation?

Romanov: Precisely. Ecology has ended up in the background in our country during the economic reorganizations. No one wants to spend anything on maintaining it in a normal condition. Neither the owner of an enterprise who has the money—the law and the local authorities do not force him—nor foreign investors, because in Russia “such” an attitude toward ecology has become the norm. Nor we ourselves, because we do not know the real situation, and no one is informing us about it. And, speaking frankly, the people also are indifferent: one is worried about how to feed the family, and another is worried about becoming unemployed. The politicians, the directors of federal organs, and the people's deputies

are not working on this in a serious way. Although enough different resolutions and decrees have been adopted of late.

Kozlov: What has to be done so that more attention is paid to problems of ecology?

Romanov: Specialists have calculated that, today, only 8-12 percent of our health depends on health services, 52-55 percent—on social and economic conditions and way of life, 20-25 percent—on the environment, and 18-20 percent—on genetics. Therefore, social and economic conditions and the ecology should become the main component of social policy in Russia, and a part of economic reforms.

For many years, the real condition of the environment in the USSR was surrounded by a solid curtain of secrecy. In a recent address, the president of the Russian Federation, in connection with World Environmental Protection Day, emphasized that the most important state task is to disclose all secrets in this sphere and to give an accurate evaluation of the ecological situation in our country. And further: to continue the frank and honest analysis of Russian ecological problems—this is an indispensable condition for their resolution.

The president also officially said that the time has come to put new economic levers of environmental protection into action, including also full compensation for the damage to society and to the citizens because of environmental pollution. The law on environmental protection envisions precisely this. However, a year has passed since the day it was adopted, but the mechanism for implementing the wise and necessary provisions of the document, as happens in our country, does not exist yet. On the other hand, the usual documents full of concerns have been adopted.

Kozlov: What kind of actions on the economic front does your front plan to undertake in the near future?

Romanov: Recently, the board of the fund came out with an initiative—to declare the third 10 days of April annual all-Russian days of protection from ecological danger. Why specifically the third 10 days? The public in many countries celebrates 22 April as “Earth Day,” and the 25th, by a decision of the presidium of the Supreme Soviet of the Russian Federation, was established as a memorial day in memory of those who have perished in radiation accidents and catastrophes. Moreover, on 20 April 1993, an edict of B. Yeltsin, “On Urgent Measures for Guaranteeing the Health of the Population of Russia,” appeared. It is proposed during those 10 days to conduct charitable actions in rendering assistance to victims, “green subbotniks [voluntary unpaid work-days],” and so on.

We are asking such a popular newspaper as TRUD and other mass media to help in the ecological enlightenment of the people. To assist in involving everyone in the campaign for clean air, water, and land.

Ecological expeditions will become important actions. We propose to start them this autumn. During the

expeditions, we will analyze the situation in the regions, disclose the secrets of the burial of radioactive and chemical wastes, determine the cleanliness of various kinds of production, and compile an ecological map of the regions and of the country as a whole.

Our plans include the establishment of a radiation forecasting service and a system for the timely collection of information on environmental pollution. The people should see this information on the pages of newspapers and on the television screen, and hear it over the radio. Then they will be able to take the necessary safety measures ahead of time. Incidentally, an "Ecological Primer" is now being readied for publication. Information can be found in it on what mercury and acid rains are, and how to protect oneself against them.

Kozlov: Will the planned measures require substantial resources?

Romanov: Money is needed. We will earn it. The charter envisions certain economic activity. We are counting on the understanding of the president, the government, business circles, commercial structures, trade unions, public organizations and movements, and the scientific and artistic intelligentsia. It would not be a bad idea for this purpose to conduct exhibitions, festivals, concerts.... We are also counting on the assistance of foreign partners and UNESCO. Social ecology is a common concern. If the scientists are right that 30-40 years remain before ecological catastrophe, then.... In general, let us act together and not temporize.

Edict, Statute on Interdepartmental Commission on Ecological Security

935D0481A Moscow ROSSIYSKIYE VESTI in Russian
20 Jul 93 p 6

[Text of edict, statute: "On the Formation of an Interdepartmental Commission of the Russian Federation Ecological Security Council"]

[Text]

Edict of the Russian Federation President

In order to ensure ecological security and the preparation of conclusions and recommendations in this sphere for the Russian Federation [RF] Security Council, and based on Article 17 of the RF law "On Security," I decree:

1. To form a permanent Interdepartmental Commission of the RF Ecological Security Council.
2. To appoint RF presidential adviser A. V. Yablokov chairman of the Interdepartmental Commission of the RF Ecological Security Council.
3. To confirm the statute on the Interdepartmental Commission of the RF Ecological Security Council in accordance with Appendix No. 1.
4. To create a working apparatus for the Interdepartmental Commission of the RF Ecological Security Council consisting of 15 persons, increasing the numbers

and wage fund for workers in the apparatus of the RF Security Council accordingly. To confirm the staff schedule of the working apparatus of the Interdepartmental Commission in accordance with Appendix No. 2.

5. To establish a wage fund for work performed in accordance with agreements concluded by the permanent Interdepartmental Commission of the RF Ecological Security Council with scientific research organizations and individual specialists out of the monthly budget of 300,000 rubles with subsequent indexation.

6. The present edict shall go into force at the moment of its signing.

[Signed] RF President B. Yeltsin
Moscow, the Kremlin
13 July 1993
No. 1035

Statute on the Interdepartmental Commission of the RF Ecological Security Council

Appendix No. 1 to the Edict of the RF President of 13 July 1993, No. 1035

1. General Provision

1.1. The Interdepartmental Commission of the RF Ecological Security Council (henceforth, the Interdepartmental Commission) has been formed in accordance with the RF law "On Security" and the Statute on the RF Security Council, approved by the edict of the RF president of 3 June 1992, No. 547.

1.2. The Interdepartmental Commission is the permanent working organ of the RF Security Council for the implementation of tasks assigned to it relating to ensuring the ecological security of the individual, society, and the state.

1.3. The legal basis for the activities of the Interdepartmental Commission comprises the RF Constitution, the RF law "On Security," other legislative acts of the RF regulating relations in the sphere of security, and the present statute.

2. Tasks and Functions of the Interdepartmental Commission

2.1. The basic tasks of the Interdepartmental Commission are:

- preparation of proposals on issues relating to the domestic and foreign ecological policy of the RF and the strategic problems of state ecological security for consideration by the RF Security Council;
- evaluation of domestic and foreign ecological threats to the vital interests of the individual, society, and state and an evaluation of existing and potential sources of ecological danger;
- preparation of proposals for ensuring ecological security in industry, transportation, agriculture, and other branches of the economy and for solving the ecological problems of protecting the health of the population,

security, the elimination of chemical and nuclear weapons, the elimination of ecological disaster and trouble zones, and others;

- preparation of forecasts for changes in domestic and foreign conditions and factors influencing the state of ecological security in the RF;
- analysis of information on the functioning of the systems ensuring the ecological security of the RF and the elaboration of recommendations for their improvement;
- preparation for the RF Security Council of draft decisions on ecological security issues.

2.2. In order to resolve the tasks entrusted to it, the Interdepartmental Commission shall:

- analyze information coming into the RF Security Council on the state of ecological security and determine which problems require immediate solution;
- prepare necessary materials on ecological security issues for consideration at meetings of the RF Security Council;
- participate in the preparation of draft normative acts and programs on issues involved in ensuring ecological security;
- interact on issues of ecological security with the legislative and executive organs of the RF;
- prepare materials for the annual report of the RF president on Russia's ecological security;
- assist in coordinating the activities of the ministries, state committees, and departments of the RF for the implementation of state programs and decisions of the RF Security Council in the sphere of ensuring ecological security.

3. Procedure for the Formation and Activities of the Interdepartmental Commission

3.1. The Interdepartmental Commission shall be created, reorganized, and dismissed by the RF Security Council. The statute on the Interdepartmental Commission shall be approved by the RF president.

3.2. The chairman of the Interdepartmental Commission shall be appointed by the RF president.

3.3. The chairman of the Interdepartmental Commission has the right to:

- obtain from state and other organs, institutions and organizations, and officials, the information, documents, and materials necessary for carrying out the activities of the Interdepartmental Commission;

- bring in state and nonstate organizations and institutions, as well as individual specialists, to perform analytical and expert assignments on a contractual basis.

3.4. The chairman of the Interdepartmental Commission shall summarize information on issues of ecological security and submit it to the RF Security Council periodically.

3.5. The Interdepartmental Commission shall include the following officials:

- the chairman of the RF State Committee for Social Protection of Civilians and Rehabilitation of Territories Suffering from Chernobyl and Other Radiation Catastrophes;
- the chairman of the State Committee for Sanitary-Epidemiological Oversight;
- the chairman of the Committee on Conventional Problems of Chemical and Biological Weapons under the RF president;
- the chairman of the Committee on the Conduct of Special Underwater Assignments under the RF Government;
- the director of the Russian Federal Service on Hydrometeorology and Environmental Conduct;
- the chairman of the Russian Federal Oversight of Nuclear and Radiation Security;
- the chairman of the Russian Federal Mining and Industrial Inspection;
- the RF first deputy environmental protection and natural resources minister;
- the RF deputy security minister;
- the RF deputy minister for defense;
- the deputy director of the RF Foreign Intelligence Service.

Should it be necessary, representatives of other ministries, state committees, and departments of the RF involved in problems of ecological security may at the decision of the chairman of the Interdepartmental Commission be invited to participate in meetings of the Interdepartmental Commission.

3.6. Meetings of the Interdepartmental Commission shall be held on a regular basis at least once a month. Should it be necessary, extraordinary meetings may be held.

3.7. The informational-analytical and organizational-technical support for the activities of the Interdepartmental Commission shall be performed by the working apparatus of the commission, in which departments shall be created along the basic lines of its activities.

Appendix No. 2 to the Edict of the RF President of 13 July 1993, No. 1035

Staff Schedule for the Working Apparatus of the Permanent Interdepartmental Commission of the RF Ecological Security Council

Director of the apparatus	1
Department head	2
Deputy department head	1
Consultant	3
Expert specialist	6
Category I specialist	2
Total	15

Chelyabinsk-65 Radioactive Accident Said Under U.S. Contract

MK2307092093 Moscow NEZAVISIMAYA GAZETA in Russian 23 Jul 93 p 1

[Andrey Vaganov report under the "Safety" rubric: "Details on Accident in Chelyabinsk-65. Plutonium from the Russian Enterprise Plutonium Was Intended for U.S. Space Program"]

[Excerpts] As NEZAVISIMAYA GAZETA has already reported, there is indirect information that at factory No. 45 of the "Mayak" Production Association, where an explosion that vented radioactive materials into the environment occurred on Saturday, 17 July, work was in progress under a contract with the United States to produce plutonium-238 for the American space industry. Yesterday, Nikolay Yegorov, Russian deputy nuclear power generation minister, confirmed that the accident occurred at factory No. 45, which is producing plutonium-238 for the United States, primarily for the realization of NASA space programs as well as for some other purposes (to build military eavesdropping devices, for instance). [passage omitted]

Undoubtedly, Russian officials and competent organizations could not have been aware that the U.S. Department of Energy has its own "NV-Line" plant near Savannah River, South Carolina, where the plutonium was supposed to be produced. Neither could they have not been aware that this production facility had run into a number of serious problems entailing environmental pollution and a threat to the personnel's health. Thinking perhaps that such problems did not and would not occur in Russia, the Russian side, without any qualms, offered its services in the production of plutonium-238 for the needs of the U.S. space and defense industry. A touching concern. Now we have something to be proud of: Whereas in the years of "developed socialism" exotic banana republics became exhausted by Russian humanitarian and other types of aid, now we are big enough to assist the industry of the United States, no less, to cope with sudden snags. [passage omitted]

For fairness' sake, it should be noted that the United States appropriated \$800 million to ensure safety in

handling plutonium and the other fissionable materials of warheads, and to build a storage facility on the territory of the ex-USSR. An instance of touching concern again. [passage omitted]

Scientist Explains Bid To Seal Sunken Nuclear Submarine

LD2307165793 Moscow Mayak Radio Network in Russian 1313 GMT 23 Jul 93

[Text] A scientific expedition is leaving St. Petersburg tomorrow for the Norwegian Sea to work on the site where the Komsomolets nuclear submarine sank. Our correspondent Valeriy Kiosa asked Tengiz Nikolayevich Borisov, chairman of the committee for special subaquatic works attached to the Russian Government, to tell us about the purposes of this expedition. Here is their conversation.

[Begin recording]

Borisov: The main purpose of this expedition is to inspect the submarine Komsomolets. This inspection will include taking samples of water and from the seabed next to the body of the submarine, and examining radioactivity levels on the submarine and around it. We also have to check on some technical details which should give us a final answer to the question of how to seal the submarine off.

Kiosa: You said you are going to take samples right next to the submarine's shell. Does it mean that you are going to use some special equipment which will allow you to take samples from inside the submarine as well as from the surface of its shell, and in particular from its bow section where the nuclear torpedoes were kept?

Borisov: We will take samples from the compartment where the nuclear warheads are situated—that is, in the submarine's bow—and around the reactor's ventilation shafts.

Kiosa: Will this expedition do any work to bring the rescue chamber to the surface?

Borisov: We will do this if conditions permit, but bringing this chamber to the surface is not our immediate task. Nevertheless, we will try to do this work in order to establish why the personnel rescue chamber malfunctioned.

Kiosa: You mentioned taking samples in order to establish the possibilities of sealing off the submarine's shell.

Borisov: The point is that the bow of the submarine will have to be sealed to prevent plutonium leaking from the warheads and poisoning the flora and fauna of the Norwegian Sea. Exactly which method we will use and which options we will choose will only be clear when this expedition has finished its work in the Norwegian Sea; that will be approximately by the end of August.

Only Russian ships will take part in the expedition. First of all, there will be the Academy of Sciences' vessel Vyacheslav Keldysh, which is equipped with two deep-sea diving chambers Mir-1 and Mir-2; these will be used

to get down to the seabed close to the submarine. There will also be two other ships. One of these is a Russian navy supplementary ship, and the other belongs to the Russian Navy's search and rescue forces. In addition, Norwegian scientists and specialists from Holland and the United States will be working on board the Vyacheslav Keldysh. They will form a working party which should find answers to purely technical questions. We hope their findings will enable us to devise a method of sealing off the submarine. We hope we can accomplish this by next year. In other words, we are going to do everything possible to prevent pollution of the Norwegian Sea. [end recording]

Automated Ecological Monitoring System for Chelyabinsk

*LD2307143493 Moscow Mayak Radio Network
in Russian 0900 GMT 23 Jul 93*

[Text] Russia's first automated ecological monitoring system is being introduced by the people of Chelyabinsk. The expensive equipment developed by the Miass mechanical engineering design office will help monitor the cleanliness of the town's atmosphere. The automatic equipment will turn out data on the condition of the air every 20 minutes. In the event of an accident or ecological disasters happening the system will make it possible to take emergency measures.

Tomsk-7: Accident Said To Contaminate 800 Square Kilometers

*93WN0471A Moscow MEGAPOLIS-EXPRESS
in Russian No 21, 2 Jun 93 p 14*

[Article by Lidiya Malash under the rubric "Society": "Catastrophe: Tomsk-7: In the Beginning Was the Lie"]

[Text] As happened in former times, the data on the scope of the accident were too low. As were investments in studying the consequences of catastrophes.

A month has passed since the time of the fire at the military-industrial complex enterprise in Tomsk-7. The findings of the official commission based on the results of an expert study say that there is no special radioactive danger in this region, the consequences of the catastrophe have largely been eliminated. However, the latest studies conducted by a special group from the business cooperation association Eraekos indicate that the ecological situation in Tomsk suggests serious dangers.

The team sent to Tomsk-7 by the Ministry of Nature Protection of Russia consisted of scientific specialists who were working back at Chernobyl. Usually they are called "liquidators," although they do not like this word for some reason. But who was it if not they who conducted the radiation and chemical analysis of the contaminated zones and who compiled the most detailed operational maps, which we could not have done without? They were the first ones to provide the essential information which became the basis of the plan for liquidating the serious consequences of radioactive

catastrophes. So it was this time too, in the second flight of the laboratory plane to the contaminated zone of Tomsk.

The usual technology for studying a territory when there are such accidents is roughly like this. A helicopter flies at a relatively slow speed at a height of 100-150 meters. It hovers over a particular zone and collects information through instruments. Then the information is processed and put on the map, constructing isolines. The laboratory plane makes it possible to do the necessary reconnaissance and detailed analysis much more quickly and efficiently. At a speed of 250-300 kilometers an hour it flies at a height of only 100 meters, cutting through the air like a knife through butter. The onboard system instantly creates maps of the cross sections and changes in the background of relatively clean areas and the concentration of radiation. There is an antenna the size of a goose egg on the plane's wing; that is how communications with American environmental satellites are supported. In one day 1,500 square kilometers of territory can be studied in this way and information from the coordinates instantly issued.

Why did I tell about this in so much detail? Because scientists have been pushing for a unique method of study using a special laboratory plane for several years now. It was used in Chernobyl and worked under order in the zones of several nuclear power plants, but up till now the so-called official research has been done in the old way. What the specialists from Eraekos learn in about 3 hours their comrades must work on for several days. Although, it would seem, where else should the latest technological advances be used if not in such extraordinarily critical situations? Incidentally, people in America are very interested in this system which has been conditionally called "Sphere" or "Dome." The environmental advisor to the president called it unique. It costs millionths of the price of a nuclear installation. Talks have been conducted on using this system on an official, state level more than once. But alas, a radioactive discharge at the Leningrad AES and the fire in Tomsk occurred just during the "talks."

So to return to the latest accident: only by fortunate coincidence did the radiation not hit the dacha settlement near Tomsk (incidentally, the vacation sites of the local leadership are located there). On that ill-fated day the wind was blowing from the other direction. Otherwise, a dramatic situation would simply have turned into a tragedy—the so-called short-lived elements which are highly radioactive would have caused people to die a slow and terribly painful death. Taken into the alveoli of a person's lungs, they seem to explode there and leave cancerous tumors behind them.

But do you know how the radiation was eliminated in the first hours and days? Snow, soil, and debris were literally scraped up with a shovel and taken away in plastic bags to be destroyed. There is nothing to say about any sort of protection for the volunteers or enthusiasts. For the simple reason that an absolutely safe suit for the liquidators has not been devised yet. It turns out that the

Chernobyl lead plates which people wore check the radiation only for some fraction of a percent. Say, instead of 100 rems a person received a dose of 95. For the worst thing is when the contaminated air ends up in the lungs.

But there are also long-lived elements which are also highly radioactive. They create gamma fields which are difficult to detect. They were detected. Now, during the last study. But the most important and alarming result is data which indicates that the contamination of the site, which was defined as an area of 80-100 kilometers, spread ominously through two "tongues" to 800 square kilometers. To the taiga side, where forest fires are already starting. A small village became part of the zone; it was Chernaya Rechka, whose residents it was impossible to even warn about the danger of contamination; the only telephone equipment there, in the local village school building, had been cut off—the school had no way to pay for such a "communications convenience." The village of Georgiyevka and adjacent territory was declared a danger zone even earlier. But then there is Naumovka, officially a supposedly "clean" settlement, even though the pasture beyond the outskirts of the village was contaminated. Where are the villagers supposed to pasture their livestock and how are they supposed to live in this "clean" settlement?

I am not exaggerating the situation surrounding the consequences of the accident at the combine in Tomsk-7. The scientists who did the recent research there are not exaggerating either. They surrendered all the documents to the Minprirody and notified the GKChS [Committee for Matters of Civil Defense, Emergency Situations, and Dealing with the Consequences of Natural Disasters] of the results of the ecological reconnaissance. The data are alarming. And above all they suggest that more Chernobyl- and Chelyabinsk-type secrets no longer have a place. Tomsk-7 needs urgent help.

Tomsk-7: Supreme Soviet Calls for Cleanup of Accident

LD2307211693 Moscow ITAR-TASS World Service
in Russian 1135 GMT 23 Jul 93

[By ITAR-TASS parliamentary correspondent Lyudmila Yermakova]

[Text] Moscow, 23 Jul—Measures to eliminate the aftermath of the accident at the Siberian chemical combine should be included among the programs to eliminate the consequences of the catastrophe at the Chernobyl atomic power station, the nuclear discharge in Chelyabinsk Oblast, the effect of nuclear tests in Semipalatinsk, and other radioactive contamination, says a resolution adopted today by the Russian Federation parliament.

At the radio-chemical plant of the Siberian combine (Tomsk-7), some equipment failed on 6 April when a uranium solution was being prepared, and a "limited volume of a mixture of steam and gas" exploded, discharging radioactive materials into the environment.

The government has been instructed to consider the question of making additional allocations to Tomsk Oblast's budget from the federal budget for priority measures to eliminate the aftermath of the accident at the combine, secure the health of its personnel and the oblast's population, and ensure the safety of the environment.

The resolution envisages the holding by the end of the year of an integrated ecological expert examination of radio-chemical technologies at enterprises belonging to Russia's Atomic Energy Ministry. Its results will be presented to parliament. The resolution notes the need to draw up a state program entitled "Safety of the Russian Federation's Atomic Power Engineering and Industry."

WESTERN REGION

Belarus: Council of Ministers Urges Measures on Ozone Protection

WS2607074993 Minsk DOBRY VECHAR in Russian
15 Jul 93 p 2.

[Report by RID correspondent Pavel Shumskiy: "Ozone Layer Over Belarus Should Be Protected"]

[Text] On 2 July, the Belarusian Council of Ministers adopted a resolution "On Urgent Measures on the Implementation of International Agreements on the Protection of the Ozone Layer." The resolution envisions, in particular, drafting an appropriate national program.

I have asked Chairman of the State Committee for Ecology Svetlana Rudneva, who is one of the coordinators of the program, to comment on this decision.

She said that two international documents—the 1985 Vienna Convention and the 1987 Montreal Protocol—have been signed by both the former Soviet Union and by Belarus itself. According to them, the Republic must gradually eliminate from industrial use substances that damage the ozone layer. The national program that is currently being drafted by the specialists of the State Committee for Ecology, the Belarusian Scientific-Industrial Association, Belarusian State University, and the Belarusian Academy of Sciences, will be partially financed by the World Bank. Another problem connected with Belarus' signature of the "ozone agreements" is that of Belarusian fees to international funds responsible for the protection of the ozone layer. After the two years that have passed since the disintegration of the Soviet Union, Belarus owes these funds about \$500,000.

In Svetlana Rudneva's opinion, one of the ways to resolve the problem of financing the ozone program is through active use of the tangible results achieved by Belarusian scientists in researching this problem.

Although the Republic does not produce ozone-damaging substances, it remains a major consumer of these substances used for the production of freezers and foam-based construction materials.

If the technological reconstruction of Belarusian enterprises damaging the ozone layer is not carried out in due time, Belarusian goods will be banned from entering the international market, and the world community may use even firmer sanctions against the Republic.

Ukraine: National Environmental Report for 1992 Being Readied

934K1475A Kiev ZELENYY SVIT in Ukrainian No 5, May 93 p 4

[Unattributed article: "National Report Being Prepared"]

[Text] The Ministry for the Protection of the Environment [Minpryrody] has begun working on the creation of the National Report of Ukraine for 1992. Materials are coming in from the local subdivisions of Minpryrody and ministries, agencies and scientific institutions. We present some of those materials in summary form.

State Inspectorate for the Protection of the Black Sea of Minpryrody:

The principal source of pollution of the northwestern part of the Black Sea is the outflow of the great European Danube, Dnieper and South Bug rivers, which bring more than 80 percent of all pollution to the sea.

The state inspectorate monitors the quality of the sea water at 115 discharge points in the Black Sea, which most fully reflects the picture of the pollution of the sea water with highly oxidizing organic matter, suspended matter, phenols, petroleum products, pesticides, heavy metals, synthetic surfactants and biogenic substances.

No appreciable changes were noted in the ecological condition of the coastal waters of the Black Sea in the inspectorate's zone of activity in 1992.

The principal content of the petroleum products rarely exceeded the maximum allowable concentration [HDK] of 0.05 mg/l. The area of the Crimean peninsula was especially clean in the quantity of petroleum products, as before. The content of petroleum products remained extremely high, however, in the bay of Sevastopol. The HDK was surpassed everywhere there, conditioned by the negative influence of petroleum products operations on the vessels of the Black Sea Fleet. The HDK was exceeded some twenty-fold in the area of the oil harbor.

The coastal strip of the Black Sea along the Yuzhne-Odessa-Ilichivsk line was researched in the greatest detail, and was typified by a high content of biogenic substances. The quantity of chemical pollutants in the sea water of the beach zone of Odessa fluctuated to a considerable extent depending on the meteorological conditions, which is explained by the obsolete system of outflow sewerage.

The state inspectorate checked 1,179 vessels in 1992, including 615 foreign ones, and 386 coastal facilities. There were 146 actions brought under the materials from those inspections, for a total of 11.5 million karbovantsi and 182,000 U.S. dollars.

Ministry of Agriculture and Foodstuffs:

Today, with the availability of various forms of land ownership, the problems of the use of chemicals, changes in soil quality and monitoring the quality of agricultural output are gaining ever greater urgency, and the performance of all of those operations should thus be under the attentive monitoring of the state and be done at its expense.

The Ukrhruntomonitorynh Ukrainian State Soil and Product Quality Monitoring Service has thus been created on the basis of the Ukhrokhym Ukrainian State Association for this purpose. It has under it the Crimean republic and oblast agricultural stations, as well as 398 rayon agrochemical laboratories. Approximately 3,000 soil scientists annually perform agrochemical investigations of the soil on almost eight million hectares.

There were 121,000 samples of fruit and vegetable produce and potatoes analyzed for nitrate content in 1982. Content above and beyond the standards was detected in three percent of the products.

The territory of 72 rayons in 11 oblasts, with a total area of 4.5 million hectares, is contaminated with cesium-137 according to the data of radiological investigation. The most contaminated soils were in Zhytomyr and Kiev oblasts.

State Committee for Oversight of Safe Work Practices in Industry and Mine Oversight:

The existing production technologies at many industrial enterprises, as well as the wastes, constitute a threat to the natural environment, as well as the population that lives nearby.

The state of the ecological situation in the cities of Horlivets and Yenakiyevyy is arousing particular anxiety. The principal contaminant of the water in that region is the Horlivets Chemical Plant, but it has not ordered plans for the screening of the water flows and bodies of water and has not allocated the necessary funds for it.

The issue of providing for the development and introduction of capacity for the waste-free treatment of mine waters with excess mineralization is not being resolved. The coal-production mines are not fully carrying out the planned construction of backfilling complexes. The amounts of rock that remain underground do not exceed 30 percent.

State Committee for Standardization, Metrology and Certification [Derzhstandart]:

The services of Derzhstandart Ukraine checked the quality of the drinking water at 89 enterprises of Ukraine in 1992. Fifty three of them (60 percent) were supplying consumers with water that did not correspond to standard requirements for organoleptic, toxicological and microbiological indicators.

Ukraine: Chernobyl Accidents Effect on Livestock Researched

934K1475B Kiev ZELENYY SVIT in Ukrainian No 5.
May 93 p 5

[Article by Candidate of Biological Sciences O. Semenova, lead scientific specialist of the Ukrainian State Agrarian University: "Our Calf's Fate"]

[Text] The results of research that we conducted on the effects of radioactive contamination on farm animals forces us to think about this. They were very disconcerting.

The goal was to determine the consequences of the accident at the ChAES [Chernobyl Nuclear Power Plant] on health and reproduction among dairy livestock in the Polissya region of Ukraine.

It was revealed at the very beginning of the work that the livestock in Ivankivskyy, Poliskyy and Narodytskyy rayons had no appreciable differences in health indicators in the first year following the accident compared to the years that immediately preceded it.

When the scope of the comparisons was changed and the data from veterinary reports of Ivankivskyy and Poliskyy rayons were analyzed starting from the sixties, it was seen that a certain increase in the losses of livestock after the accident in 1986 was preceded by another two waves of worsening health among the cattle and pigs. One of them began in the middle of the 1970s, and did not decline before the accident. The second came at the beginning of the 1960s.

The indicated time interval was hypothetically divided into four periods: I—to the middle of the 1960s, II—to the middle of the 1970s, III—to 1986 and IV—from 1986 and later.

Each of those periods is characterized by events that had a certain effect on the radiation situation in the environment. It was in 1963 that an almost 20-year period in land testing of nuclear weapons came to a close. One consequence of that was the radioactive contamination

of the environment on a global scale. In the next decade, after the end to testing, there was a decrease in the background radiation on the planet.

The construction and subsequent entry into operation of the four units of the ChAES falls in the middle of the 1970s and the beginning of the 1980s. It is not known that it was "exhaling" into the environment. But it is known that the Hanford nuclear complex in the United States was closed because it had a negative effect on the health of the population on the adjoining territory. Its effects are linked with the duration of radiation contamination of the environment, which started in the construction and operation of that facility. Hopes that similar nuclear facilities on our land, and the ChAES in particular, are ecologically safer have no foundation. It thus cannot be ruled out that the ChAES has created a source of local contamination of the environment even in normal operating mode.

Zones of varying scope and composition of radioactive contamination were created as a consequence of the accident in 1986, and are hypothetically divided into those that are suitable or unsuitable for agricultural production and public habitation. The actual state of biological safety on these or those territories is unknown. This is virtually the first time living nature has encountered such a scale of dissemination in time and space not only of penetrating radiation, but also of too many toxic substances of artificial origins that have never before occurred on the Earth's surface.

Proceeding from the aforementioned, the health indicators of animals in period II, as the most radioactively clean, were taken as the base unit. The other three periods were then established in the relation to them.

The dynamic of the indicators over the periods of years thereby turned out to be not only obvious, but quite paradoxical as well (see table). The data for periods I, III and IV for most indicators exceeded the analogous data for period II. The percentage of cattle plague among cattle was 4.4 times higher in period I than in period II, for example. The excess was 1.8 and 2.4 times for periods III and IV respectively.

Correlation of Indicators by Periods

Indicators by rayon	Average for periods				Maximum for periods			
	I	II	III	IV	I	II	III	IV
Poliskyy Rayon								
Cattle plague: all cattle	4.4	1	1.8	2.4	5.3	1	2.1	2.9
pigs	3.6	1	0.9	0.9	3.3	1	1	1
piglets	—	1	0.5	0.7	—	—	—	—
Cattle: stillbirths	6.3	1	5.4	4.4	—	—	—	—
abortions	3.2	1	3.9	7.6	—	—	—	—
barren	2.6	1	0.7	0.3	—	—	—	—

Correlation of Indicators by Periods (Continued)

Indicators by rayon	Average for periods				Maximum for periods			
	I	II	III	IV	I	II	III	IV
Ivankivskyy Rayon								
Cattle plague: all cattle	1.8	1	1.4	2.3	1.4	1	1.4	2.5
calves	—	1	1.4	2.3	—	1	3.1	5.9
pigs	1.7	1	1.5	1.4	1.3	1	1.8	3.2
piglets	1.3	1	1.4	2.0	1.3	1	1.4	2.4
Cattle: stillbirths	2.7	1	2.4	1.8	—	—	—	—
abortions	2.0	1	1.7	2.6	—	—	—	—

The fact that the quantity of stillborn among cattle was higher at the beginning of the 1960s than in period IV draws attention to itself. It was indeed 6.3 times higher than the norm in Poliskyy Rayon and 2.7 times in Ivankivskyy Rayon, versus 4.4 and 1.8 times in period IV. It thus follows that under the conditions of period I, when the level of radioactive contamination in Polissya went up tens of times compared to the natural background, the deviation in the reproductive function of animals was greater than when the radioactivity of the soil, feed and milk increased by hundreds of times as a consequence of the 1986 accident. That situation does not conform to the level of contamination. It can be explained to a certain extent by the fact that there is regular culling of cows with disruptions in their reproductive functions in livestock breeding. That and the use of bulls that were raised under the most optimal and ecologically clean conditions—the heredity of their offspring is half devoid of consequences from the accident in each generation.

But as we see, even such very radical measures did not prevent the fact that the indicators of stillborns and abortions among cattle increased significantly in Poliskyy Rayon starting with the entry into operation of the ChAES—by 5.4 and 3.9 times in period III, and 4.4 and 7.6 times in period IV, respectively.

The indicators of reproduction of the livestock would have perhaps been even worse without these measures.

It should also be noted that the maximum indicators of cattle plague among calves during period III, which in certain cases testifies to the almost general loss of offspring, corresponds with the dates of the operational start-up of the ChAES units in 1978, 1979, 1981 and 1983 and the accident in 1982. The last confirms the previously expressed assumption that the radioactive contamination of Polissya occurred not as a consequence of accident situations, but rather during the operation of the AES.

The indicated combination of phenomena as a whole gives grounds to link the periodicity of the changes in the

state of the animals with the radioactive burden of the environment under various circumstances. These burdens took shape considerably before 1986. The negative consequences from them in animal husbandry occurred at dose levels significantly lower than today's.

It is entirely possible that these deviations will still not be catastrophic for the productive qualities of the animals for a long time. But if we take into account that the density of the placement of nuclear-power plants on the territory of Ukraine considerably exceeds international norms, as well as the fact that there are another seven nuclear-power plants operating or being built within a radius of 250–500 kilometers from Chernobyl and that the defense industry of Ukraine had some 700 plants as of 1992 where the utilization or the manufacture of nuclear material cannot be ruled out, it becomes understandable that the radiation burdens on the population of agricultural animals are not limited to the area of the Chernobyl accident. It is more sweeping and, unfortunately, not monitored. This deprives the field of the opportunity of making timely use of preventive measures that, while not able to spare the animals from the effects of radiation, are able to reduce it considerably.

The effects of radiation, of course, are not restricted to agricultural animals alone. People are also living and working in that environment. They naturally cannot avoid the effects of the radiation that has accumulated so rapidly in the environment over the last fifty years. Has it thus not also made its contribution to the worsening demographic situation of Ukraine, which is already not reproducing its population?

What can the forecast for the future be therein? We should take into account that the heredity of people has specific paths of damage. All of the healthy population of the male gender from birth is exposed to serious risk of radiation exposure or chemical contamination during military service or in production, especially agricultural. It is perhaps no accident that mortality in Ukraine today is almost twice as high as in the countries of Western Europe, Canada or Japan. It increased by 32 percent over 1970-89 alone.

It is entirely obvious that the answers to these questions will not be obtained without a comprehensive ecological and genetic investigation of the state of the biosphere in Ukraine around all of the nuclear facilities. This should be carried out by specialists in various fields, and as fast as possible. Proceeding from the imperfections in the instruments therein, the indicators of radiological surveys should not be taken as the main factors in predicting the biological consequences in areas of potential contamination. There is an urgent need to start namely with the state of biological systems so as to prove the effects of so-called low exposure doses.

It looks like radiological specialists, lulled by the 35-rem concept, have themselves wasted a lot of time and hindered others from investigating the situation. The ambitions in our times of some specialists, whose inordinate growth has fostered secrecy, should give way to open discussion of any of the consequences from the testing, utilization, supply and destruction of nuclear products. That data is still being used by a very narrow circle of specialists, who are little troubled by the moral aspects of the problem of nuclear-power engineering.

If the foregoing makes sense and our data find confirmation in other studies, this will serve as a warning for decision-making, when it will be necessary to consider well the price of progress versus the price of the measures that can keep progress from being a means of genocide of one's own people.

Matters look very serious, in our opinion, and there is no time to spare for prolonged academic conflicts.

Ukraine: Nuclear Safety Official on Moratorium, Chernobyl AES's Future

93WN0494A Kiev GOLOS UKRAINY in Russian
17 Jun 93 p 3

[Interview with Nikolay Shteynberg, chairman of the Ukraine State Committee for Nuclear and Radiation Safety, by Zhozef Shapoval: "First Take Care of Safety and Then Think About Megawatts"; place and date not given]

[Text] Ukraine's nuclear energy is at a crossroads. What is in store—a vigorous "renaissance," a marking time in place, or a closing down of existing units? Which will carry the day—the acute need for energy or the fear of a repetition of nuclear disaster?

Answers to these questions are given by Nikolay Shteynberg, chairman of the Ukraine State Committee for Nuclear and Radiation Safety.

Shapoval: More and more people are saying now that the moratorium on starting new nuclear units until 1995 has outlived its usefulness. Do you share these ideas?

Shteynberg: Remember that Ukraine gets about 30 percent of its electricity from AESes [nuclear power plants]. Therefore, artificially keeping nuclear power in a state of total indefiniteness, without precise guidelines or a concept of development, will result in the final collapse of Ukraine's economy, given its poor oil and gas reserves.

But neither can we ignore the vital safety of AESes. That is why the Supreme Soviet instituted the moratorium. But instead of giving the "red light" to obsolete reactors which are not up to today's safety standards, they froze the construction of six new units—the kind which are similar to Western ones in terms of safety features and have a high degree of construction readiness.

Naturally, this oversight needs to be corrected. But it cannot be too hasty; we need to take account of the objective difficulties which Ukraine's nuclear power industry has confronted since the breakup of the USSR.

It doesn't even have a proper legal status now, because the draft of the Law on the Safe Use of Nuclear Energy and Radiation Protection—which, incidentally, was rated positively by specialists from various countries—has been stuck in the Cabinet of Ministers for almost three months.

We don't have enough specialized subunits in the sphere of reactor technology or the necessary research base. Relations with Russia have yet to be settled with regard to deliveries of fuel to the AESes and the return of spent fuel. We have made no progress in creating our own fuel cycle. Nor do we have a national program for handling radioactive wastes.

Therefore, the main question is not whether to rescind the moratorium but how to solve the safety problem after it is rescinded.

Shapoval: Is this going to be the final year in the sad story of the Chernobyl AES? "Quiet diplomacy" concerning this painful issue is still going on.

Shteynberg: I don't want our conversation to drift into the fashionable theme of the manipulations of the "nuclear lobby." Instead of pasting labels it would be better, again, to weigh all the pros and cons.

Even those who are not especially knowledgeable about the fine points of nuclear power have probably heard about the vulnerability of Chernobyl-type reactors. Since the disaster, units of the Chernobyl plant have been substantially modernized, making them considerably more reliable. Much has also been done to improve operational safety. Unfortunately, however, RBMK [high-power channel-type reactors] have certain negative features which cannot be eliminated. In the third unit this is partially compensated by special safety systems; the first unit does not have them.

Hence, proceeding on the basis of the priority of safety over economic considerations (and that has to be the state's policy in nuclear power), the parliament's insistence on closing down the plant until the end of the year is a reasonable one.

Nevertheless, it would be premature to give up totally on the Chernobyl AES. Taking units out of operation is a lengthy process, one that is new to our state. One way to deal with the problem is to create a research center based at the Chernobyl plant and in the city of Slavutich to deal

with problems of the safety of nuclear power plants, taking them out of operation, and handling radioactive wastes.

Shapoval: Before long, the results of the international contest for the best design to convert the Ukrytiye [Shelter] facility to an ecologically safe system will be tallied. The jury does not include representatives of the State Committee for the Supervision of Nuclear Power. Is this a vexing mistake or a deliberate position?

Shteynberg: We have to be independent in making the decision to issue a license to rebuild Ukrytiye or build a new facility. Taking part in the jury would also tie our hands in conducting further supervision and licensing work on the facility.

Shapoval: Would you say a little bit about the facility itself? In recent years it has become overgrown, so to speak, by another "sarcophagus" of various kinds of rumors, falsehoods, concoctions, and proposals.

Shteynberg: Indeed there are plenty of problems that are of concern to specialists.

I think one of the principal tasks of today is to ensure continuous monitoring of the condition of the fuel-containing masses as well as the roof, walls, and foundations of the facility. The data-diagnostic complex that is being used does not meet all the requirements of objectivity, timeliness, and completeness of the information concerning processes taking place within the breakup, and it needs to be substantially overhauled.

I want to say, however, that there are no grounds for panic. Analysis has shown that even in a worst-case scenario, for example the complete breakdown of Ukrytiye, the consequences would be felt only on limited territory around the Chernobyl facility and would not go beyond the buffer zone. It is the psychological consequences that would be difficult.

And so, scientists and specialists have a lot to puzzle over. I hope the international contest will bring forth fresh, original ideas and bold innovations. But I don't think this extraordinarily difficult technical problem can be solved with any one-time actions. We need systematic, painstaking work, particularly by Ukrainian specialists.

Shapoval: What has been done along these lines?

Shteynberg: The State Committee for Supervision of Nuclear Power Plants, Minchernobyl, Goskomatom, and the Ukraine Academy of Sciences have agreed on a list of priority measures to improve the operational safety of the Ukrytiye facility. In particular, plans call for creating effective systems of routine monitoring and diagnosis of external emissions, the condition of fuel-containing masses, construction components, research on the migration of radioactivity and ways to limit it, the adoption of reliable equipment and methods of decontamination, fire extinguishing, and so on. The roof and walls of the "sarcophagus" are being hermetically sealed. More than half the leaky places have been eliminated.

But these are just the first steps. I share the opinion of the scientific-technical community concerning the necessity of immediately working out a national concept to deal radically with problems of the unsafe unit. An intersectorial coordinating center will be necessary in order to unite the efforts of scientific and production collectives and find sources to finance the work and scientific research.

Ukraine: Future of Chernobyl AES Said To Be Uncertain

WS2607074493 Kiev KHRESHCHATYK in Ukrainian 20 Jul 93 p 5

[Article by Mykola Khriyenko: "The Situation Around the Moratorium"]

[Text] After the explosion of the Chernobyl nuclear power plant [AES] reactor in April 1986, the cooling and reactivation of the three saved power units cost many thousand liquidators their health or life. Later, everything settled down. However, during the night of 11 October 1991, an electric generator exploded in the second power unit, and all the expensive equipment along with almost 1,000 square meters of the turbine house roof got completely burnt. Fortunately, it was not a radiation accident, and it did not cause radioactive contamination. However, the protests all over the world were so powerful that the Ukrainian Supreme Soviet decided to withdraw all active power units of the Chernobyl AES from operation by the end of 1993. (After the accident, the second power unit was out of operation.)

Today, under the complicated economic situation in Ukraine, specialists from the Chernobyl AES are persistently insisting that the Supreme Soviet deputies prematurely adopted this decision. The principal arguments are as follows:

The economic aspect: Since 1986, the Chernobyl AES has produced almost 100 kilowatt-hours of electric energy worth \$4.64 billion in world market prices. Today, the two operating power units can produce up to 10.3 billion kilowatt-hours of electric energy of a total value of \$515 million, and save 4 million tonnes of any organic fuel. Additionally, they can supply the industry with up to 30 tonnes of silicone with a total value of \$1.2 million. Altogether, the Ukrainian economy has been losing up to \$12 billion a year since the explosion (in 1984 prices).

The ecological aspect: Mykola Sorokin, general manager of the Chernobyl AES Incorporation, claims that the Chernobyl AES does not trail behind Russian nuclear power plants in failure prevention, but in many cases it is superior to them. Additionally, many specialists claim that after the closure of the Chernobyl AES, the ecological situation will not improve, but on the contrary, it will deteriorate, because in order to produce the needed amount of energy, it will be necessary to burn huge amounts of coal or mazout in newly-built thermal power stations.

What do the supporters of the cancellation of the moratorium on nuclear power engineering propose? The Chernobyl AES reactors can be used for the next 20 years, the first power unit can produce electric energy until 1997, and the third power unit until 2001. Additionally, the moratorium on installing new power units in other power plants should be canceled and the present power units of the Chernobyl AES should be gradually replaced by newer units. The Ukrainian Council of Ministers has already proposed to change the Supreme Soviet decision on building new nuclear power plants on Ukrainian territory adopted on 2 August 1990. People's deputies did not approve the cancellation of the moratorium, but with the growing shortages of energy, opponents of the moratorium will be exerting more pressure on the Supreme Soviet. Complex questions that the moratorium aroused will only strengthen their positions: Where can the alternatives to the Chernobyl energy be found? How will the future of the staff of the plant look? Who will decide what to do with the town of Slavutych? So far, there are no answers.

Ukraine: Minister Views 'Enormous' Dangers of Chernobyl

AU2707092693 Kiev UKRAYINSKA HAZETA
in Ukrainian 22 Jul-4 Aug 93 p 4

[Article by Yuriy Kostenko, Ukraine's minister of environmental protection: "Ten Tonnes of Radioactive Death"]

[Text] UKRAYINSKA HAZETA has covered, in sufficient detail, the international competition of designs and technological solutions aimed at transforming the "Ukrytya" [Shelter] Facility of the Chernobyl Atomic Electric Power Station [AES], known as "The Fourth Unit Sarcophagus," into an ecologically safe system. The design "Resolution" won the first stage of the competition. Its team of designers includes a number of leading French and German firms, as well as Ukrainian organizations, in particular, the Kiev Polytechnic Institute, Ukrbud and Ukrmontazhspetsbud [construction organizations].

In this article, I want to discuss the ecological danger presented by the sarcophagus—the protective reinforced concrete structure with a total mass of 25,000 tonnes around the destroyed fourth power unit of the Chernobyl AES. As minister, I am quite worried about its content and state. When this structure was built in conditions of a high-radiation field, it was not possible either to adhere to the normative requirements for fixing bearing structures or to control the quality of assembling operations. The main bearing elements of the "Ukrytya" lie on structures that remained after the reactor exploded. It is impossible to carry out a final examination of the reliability of either the former or the latter or to monitor changes in their state owing to the radiation situation and to obstacles in the form of accumulations of debris. Therefore, sudden displacements and destruction of structures that are directly connected with the bearing are possible. All of this may cause considerable sections

of the structure to collapse with all the consequences that will be dealt with later in this article. The same consequences may be expected in the case of the collapse of the upper 3,000-tonne slab of the reactor's biological protection that was torn off by the explosion and hangs, like the sword of Damocles, over the destroyed reactor.

During the construction of the sarcophagus, a considerable mass of concrete flowed into the destroyed structure, and, together with the accumulations of debris, it prevents access to many of the facilities and there are fuel masses buried under it. This is one of the reasons why, to this day, no precise data may be obtained on the distribution or quantity of nuclear fuel buried there.

Estimates suggest that the sarcophagus contains a maximum of about 190 tonnes of nuclear fuel. This is in different forms: In the form of remains and fragments of the reactor's active zone, in the form of slag-like glass and pumice lava that melted during the accident and later solidified, and in the form of particles whose size varies from 4 to 40 microns. However, a great part of them are of micron size or smaller and present a special threat owing to the high mobility of these particles and the possibility of them being inhaled into human lungs.

A certain amount of fuel is stored within the active zone and the rest is distributed throughout the sarcophagus both in the state of concentrated radioactive mass (lava flows) and that dispersed in the concrete, the buildings, sand and gravel, as well as in other materials with a total mass of more than half a million tonnes.

Today, the reserves of fuel and radioactive materials in the active zone are responsible for generating between 50 and 70 kilowatts of heat, which reaches a temperature, according to experts, of 200 degrees centigrade. The temperature differences, the radiation, and, in particular, the radiolysis of water, as well as possibly other as yet unidentified factors, lead to an extremely fast breakdown of the lava and to an accumulation of radioactive dust. A considerable mass of nuclear fuel has become transformed into an estimated 10 tonnes of radioactive dust. This dust, together with other factors, such as the movement and concentration of nuclear masses inside the sarcophagus, something that may lead to a nuclear chain reaction, presents enormous ecological dangers. This is because, in the specific conditions in which the sarcophagus was built, a great quantity of cracks and gaps with a total area of 1,000 square meters have remained in it. For that reason, even if we leave aside possible earthquakes and storms, the sudden falling of construction units inside the buildings may lead to a release of clouds of radioactive dust outside the building, something that, as already stressed, is quite possible in a structure that is not up-to-date in design and has been damaged by the explosion.

There is yet another way in which radioactivity may escape into the environment—in water that enters the sarcophagus as snow and rain and then oozes from it. Studies suggest, in addition to the destruction of the lava-like masses and the creation of dust, that new water

soluble compounds of uranium and plutonium form at the surface under the effect of radiation and processes of atmospheric oxidation. These compounds are characterized by increased solubility and migration capability and are leaked out in water.

Consequently, the existing sarcophagus with its nuclear filling is an ecologically dangerous system.

The adoption of a decision regarding the choice of the main way to transform the sarcophagus into an ecologically safe system must be based upon understanding this and taking it into account. The potential nuclear and radiation dangers to the environment presented by this facility will remain as long as it contains nuclear fuel and other radioactive substances in an uncontrolled state. In accordance with physical laws, this may be for thousands or hundreds of thousands of years.

It is not Ukraine's fault and Ukraine cannot tolerate the fact that, as a result of the worldwide nuclear experiment on its people and their descendants, the eternal threat of ecological disaster hangs over it. It has the right to expect understanding and assistance on the part of international organizations and individual countries of Europe and the world.

[Begin italics] It is true that, so far, some of them, for example, the International Atomic Energy Authority, stick to the position of disinterested observers or even oppose attempts to heal this nuclear wound on the body of our country and of the entire European continent, claiming that Ukraine does not really need assistance, but is cadging and profiteering from the Chernobyl catastrophe [end italics].

If we occupy a principled position and do not rest content with taking "well-wishers'" advice on temporary (in reality just "cosmetic") solutions that may lead to a situation where we may find ourselves face to face with a new disaster, it is necessary to start fully dismantling and cleaning the fourth unit of the Chernobyl AES and removing from it all radioactive substances for their organized burial and controlled storage. Also taking into account the huge masses of radioactive substances within the sarcophagus, of special significance is the experience of dealing with it and making use of advanced technologies to extract, process, separate, package, store, and bury the radioactive waste. The majority of these operations must be carried out by remote control. The work must be conducted in an ecologically safe shelter ("Ukrytitya-2"); other ecological measures must also be adhered to, for example, the use of an impermeable curtain (wall) in the soil that would not allow the release of radionuclides into the environment and under corresponding dosimetric and radiometric control.

The "Resolution" design envisages the construction of "Ukrytitya-2" as a plant for dismantling and subsequent remote-control development of the existing sarcophagus and the enclosed fuel masses and radioactive materials.

Thus, technological ways of resolving the problems associated with the Chernobyl AES have been proposed. The

implementation of the project will also enable Ukraine to become gradually integrated into international scientific and technological cooperation, attract international investment, obtain access to the most up-to-date technologies, and resolve problems of the employment and social protection of the population of the town of Slavutych.

It is now important to implement the project, and it may be done, but on one condition only: The construction of this facility, which is vitally important for Ukraine, must not marred by political speculations and the main goal—to transform "Ukrytitya" into an ecologically safe structure—must not become a mirage as in the case of the RBMK [expansion unknown] reactor's safety.

CAUCASUS/CENTRAL ASIA

Georgia: Parliament Adopts Ownership Law; Environment Minister Quits

AU2107161393 Tbilisi SAKARTVELOS RESPUBLIKA in Georgian 16 Jul 93 p 1

[Unattributed report under rubric "Diary of the Georgian Parliamentary Session": "There Is a Law on the Right of Ownership"]

[Excerpts] [passage omitted] At the end of the session, the "Greens" faction in the Georgian Parliament delivered the following statement: "For a long time now, we, Georgia's Greens, have had information that the Cabinet of Ministers have created such an atmosphere in their relations with the Ministry for the Protection of the Environment, that it has become virtually impossible for the department to carry out its functions. Therefore, Shota Adamia, the minister for the protection of the environment, has submitted a statement to the head of state—chairman of the Parliament in which he points out that, in the situation that has been created, there is no longer any sense in his remaining in his post and requests that he be relieved of his duties. In all this time, the minister had not lost hope that the situation would improve and that he would be able to implement the measures necessary for environmental protection. This has proved impossible and has resulted in Batoni [Georgian polite form of address] Shota Adamia, the minister proposed by the head of state and approved by Parliament, an eminent scientist and organizer, deciding to resign from the post he holds." [passage omitted]

BALTIC STATES

Estonia: Issues Surrounding Removal of Reactors From Naval Training Facility

93WN0469A Moscow ROSSIYSKAYA GAZETA in Russian 17 Jun 93 p 5

[Interview with Vyacheslav Perovski, chief specialist of the scientific research and planning and design technological association VNIPIET (St. Petersburg), under the rubric "Disarmament and Ecology," conducted by

Aleksandr Yemelyanenko: "Russia Leaves the Baltics and Takes the Radioactive Wastes With Her"; date and place not given]

[Text] The Government of Estonia proposed to Russia to dismantle and move outside the republic's borders two nuclear reactors belonging to the Russian Naval Forces training center in Paldiski.

In an interview with our correspondent, Vyacheslav Perovskiy, the chief specialist of the scientific research and planning and design technological association VNIPIET (St. Petersburg), commented on the situation.

Perovskiy: A training base for atomic submarine personnel of the former USSR was created in Paldiski 25 years ago; it is the Naval Forces' main training center with operating reactors. There are only two of them: the first was launched in 1968 and the second in 1982. Both steam-generating plants (PPU) with water-cooled reactors were installed in surface modules which by their configuration and contours duplicate the power engineering compartments of submarines exactly.

Information: The first AES in the world, which went on line in 1954 in the city of Obninsk in Kaluga Oblast, has used up its service life, but nothing is known of plans to dismantle it.

Because of public protests after the earthquake in Spitak, the Armenian AES was taken out of operation but not dismantled.

After the accident in 1979, the Three-Mile Island nuclear power plant in the United States was taken out of operation but not dismantled.

After the 1986 accident, the destroyed fourth unit of the Chernobyl AES was put in a sarcophagus but remained in the same place.

Nuclear reactors of atomic submarines and atomic ice-breakers which were damaged or had used up their service life until recently found their final place of refuge in the waters of the World Ocean.

Yemelyanenko: But the problem, as I understand it, is not only the reactors themselves.

Perovskiy: Yes, not just them. Located in the technical area of the training center, in addition to the two modules with PPU's, are a storage facility for spent nuclear fuel, settling tanks for gathering liquid and storing solid radioactive wastes, a special water purification unit, a ventilation center, a technical laboratory building for radiation safety services, and many other things which make up the full infrastructure of this level of nuclear power engineering installation.

Yemelyanenko: And what kind of shape is this entire system in?

Perovskiy: Both reactors were sealed in 1989. I must mention that they were operated in a most highly skilled way and "broke in" at least 80 percent of the crews of the new nuclear-powered vessels. And, the reactors' active zones have used up no more than one-third of the service

life. The settling tanks and storage facilities contain 600 cubic meters of liquid and up to 80 cubic meters of solid radioactive waste.

Yemelyanenko: Then the reactors were shut down not for technical reasons but for political reasons?

Perovskiy: Not quite. Already by the end of the 1980s the Navy leadership began to move toward the decision to stop using the existing reactors to train crews. More refined training equipment based on computers came to replace them. But there was, of course, an underlying political reason. Since 1992 training of crews in Paldiski has ceased altogether, but the training center itself has acquired the status of a military unit of the Russian Federation Ministry of Defense temporarily located on the territory of independent Estonia.

Information: Back 2 years ago through Decree No 545 of 31 January 1991 the USSR Cabinet of Ministers envisioned resource support of measures to utilize the power engineering installations in Paldiski. Through Decree No 644 of 31 August 1992 the Gaydar Government ratified the allocation of financial resources. The 2 October 1992 Directive of the Commander-in-Chief of the Navy and the 24 September 1992 order of the Russian Federation minister on atomic energy defined the procedure for utilizing all structures at the training center's technical site with the work to be complete by the year 2000.

Yemelyanenko: By focusing attention on the two reactors in the Baltics, are we not ignoring the general problems which have built up in nuclear power engineering and in the atomic fleet, in particular?

Perovskiy: On the contrary, we could work out different options for resolving these problems. Take for example the utilization of the nuclear submarines which have used up their service life. Only the bow and stern assemblies are presently being cut out and stripped on the ships which are being decommissioned. The power cells which certainly determine the ship's nuclear affiliation remain untouched. By various methods they are kept afloat or remain on the dock floors of ship repair enterprises. Captain 1st Rank Pavel Smirnov from the Pacific Fleet wrote about this acute problem a year ago in ROSSIYSKAYA GAZETA ("Nuclear Privatization," 25 May 1992—editor).

In Estonia we have had to work on dismantling the reactor cell, since technical possibilities for transporting a block which weighs 2,000 tonnes do not exist. Without getting into the technical details, I will say that by the most modest estimates the total weight of the radioactive materials which are supposed to be removed is at least 8,000-9,000 tonnes.

Yemelyanenko: Just who will agree to accept the radioactive "presents" from the Baltics?

Perovskiy: Let us start with the fact that these are not someone's "presents" there but rather the fruits of our own activity, and we must not leave such a burden as a legacy to the Estonians. But as for the particular place and territory—that is the second question, and, I think,

we will resolve it with a civilized approach. The marine option for burial which was being practiced before is definitely ruled out now.

Yemelyanenko: Some European countries, in particular the FRG, are expressing their readiness to provide assistance to Estonia in eliminating the ecological damage done to its territory by the Russian nuclear installations. There are proposals to work out a special technology for the center in Paldiski too.

Perovskiy: Even theoretically I find it difficult to imagine foreigners unloading the nuclear fuel from our reactors. And of course no one is going to undertake to move radioactive waste to somewhere in Nevada out of altruistic considerations. As for the financial aspect of the matter, the aid of the Commission of the European Communities would be most welcome for Estonia. I think that small deliveries of individual protective gear and construction equipment from Germany, in particular excavators and maneuverable 100-tonne cranes, would be found to be suitable.

Yemelyanenko: As far as I know, work at the training center site could already begin this summer. I know that the Estonian side has a great interest in this. It is June now. What has already been done?

Perovskiy: A radiation survey of the installation has been made, the basic principles for stripping and dismantling the structures have been formulated, possible plans and routes for removing the radioactive materials have been determined, and co-agents have been chosen. The design assignment was officially formulated and registered and confirmed by the client (that is, the Naval Forces) back on 30 December of last year.

And one other thing which is of considerable importance, friendly business relations have been established with the Estonian side and the personnel who service the installation. The chief of the center, Hero of the Soviet Union Rear Admiral Olkhovikov, has invariably met us halfway and helped with what he could when a group of specialists and I had to be at the installation for a long time in December of last year. We were doing a study of the shutdown reactors. Even then we understood that no matter what we had to keep the qualified personnel of the training center and maintain the diesel station, the boiler-house, and the steam and water lines in working condition. What kind of work can be done without water and steam?!

Information: Vyacheslav Perovskiy began his naval service in 1959 in Andreyev Bay at a coastal base for recharging nuclear reactors. In 1965 he requested a nuclear-powered vessel. From 1973-1986 he was responsible for the recharging and handling of spent nuclear fuel in the technical directorate of the Northern Fleet. In the early 1980s a radioactive leak at an emergency storage facility for spent fuel was eliminated under his leadership. Years later Perovskiy had to perform an even more serious job at the same installation along with Vladimir Bulygin's group—eliminate a dangerous build-up of spent nuclear fuel elements. Bulygin received the Hero for this and his

boys got a vehicle apiece, and Perovskiy received the Order of Friendship of Peoples.

The award proved to be far-sighted.

Estonia: Finland Signs Pact To Aid Water, Air Cleanup

93WN0510A Helsinki *HELSINGIN SANOMAT*
in Finnish 3 Jul 93 p 7

[Article by Jorma Rotko: "Finland and Estonia Reach Environmental Accord"]

[Text] Last Friday in Tallinn, Ministers of Environmental Affairs Sirpa Pietikainen and Andres Tarand reached an agreement regarding some joint projects for environmental protection in Estonia. Important projects would involve desulfurization in the two thermal power plants in Narva, as well as wastewater treatment in Tallinn and Kohtla-Jarvi.

A desulfurization system delivered by A. Ahlstrom is already operating in Narva, and the YIT-Corporation is working with subcontractors in the first stage of revamping the wastewater treatment plant in Tallinn, while Vesi-Hydro Oy is working on the situation in Kohtla-Jarvi. Estonia's extensive environmental problems have already provided work for Finnish companies.

Burden on Gulf of Finland Decreases

The signed agreements will result in a reduced wastewater burden on the Gulf of Finland and lower amounts of air pollutants reaching Finland from Estonia. Until now, the wastewater cleaning plant in Tallinn has been too small and its design is outdated. The biological section of the water treatment plant, which will be completed in October, will reduce the release of organic effluent by two-thirds from the 1991 level.

During the 1970s and 1980s, the power plants in Narva, which use oil shale, annually emitted as much sulfur dioxide into the atmosphere as all Finnish industry. When Estonia became independent, industrial production decreased and emissions from energy generation were cut in half.

According to Tarand, air quality in Tallinn has improved somewhat, as the Soviet-era smokestack industry has gone bankrupt and the factories stand idle.

Minister Pietikainen's trip to familiarize herself with the conditions in Estonia was part of a more extensive tour of the Baltic states. Among other places, she also visited the Ignalina Power Plant in Lithuania.

"On the surface, the power plant appears adequate, but compared to power plants in the west, the Ignalina plant has some shortcomings which could be corrected by means of international cooperation," Pietikainen noted.

Many Lithuanian public officials have expressed the view that the entire power plant should be shut down, but that is not economically feasible for Lithuania. Within the scope of Nordic cooperation, the overhaul of

Ignalina is Sweden's responsibility, while the Russian plant Sosnovyi Borin, near St. Petersburg, falls on Finland's shoulders.

Sillamae Wastewater Pond Inspected by Ministers

Pietikainen and Tarand also visited Sillamae, where 4 million tons of radioactive waste from the uranium industry is stored, and where a wastewater pond is located, which is separated from the Gulf of Finland by a 20-meter-wide dirt wall.

Andres Tarand reported that the waste problem is being studied by a joint Nordic commission, which is due to submit the results of its analysis in the fall. After that, a decision will be made concerning how to handle waste products.

Tarand stated that radioactive water is trickling into the Gulf of Finland, and that slightly increased radiation levels have been measured 300 meters from the shore. The radiation, however, has not reached hazardous levels. The biggest problem would occur, if radioactive waste reached groundwater, because nothing could be done to eliminate it after that.

Estonia: Environmental Pact Aims at Cleanup for Gulf of Finland

PM2307170693 Helsinki HUFVUDSTADSBLADET in Swedish 3 Jul 93 p 5

[FINSKA NOTISBYRAN report: "Finland and Estonia Signed Environmental Agreement"]

[Text] Finland and Estonia have clarified their environmental cooperation. Yesterday the two countries' environment ministers signed an agreement on the subject in Tallinn. The agreement aims to reduce air pollution and the problems of waste water in the Gulf of Finland. The previous cooperation agreement between the countries came into force last year.

Environment ministers Sirppa Pietikainen (National Coalition Party) and Andres Tarand also reached agreement on cooperation projects covering both the refurbishment and enlargement of water purification plants and the construction of a water purification chemicals factory in Tallin. The agreement also covers a reduction in sulfurous emissions from the power stations in Narva.

Tarand believes that through the assistance of international aid bodies and cooperation, Estonia will achieve the agreed targets for water protection. On the other hand the targets for air protection are more difficult to achieve.

The emissions from the power stations in Narva are one of Estonia's biggest air pollution problems and they also lead to acid rain in parts of Finland. In the past the power stations, which utilize shale coal, produced as much sulfur dioxide as all of Finland's industrial plants put together. Since Estonia became independent, emissions resulting from energy production have fallen by

about 50 percent. But now that Estonian industry has recovered, electricity production has again increased, as have emissions.

According to Tarand, it is possible that the nationalist conflicts between Estonians and Russians in Narva could mean that the cleanup of the power stations is delayed. But at the same time the state of the environment is one of the few problems about which Russians and Estonians are equally concerned. There are two power stations in Narva. At one power station this summer a Finnish desulfurization unit has been tested, with positive results. Yesterday the two countries reached agreement on a study which will compare different development and financing alternatives for the power stations.

The biggest water protection problem in Estonia in respect of the protection of the Baltic Sea is the inadequate purification of waste water from industry and human settlements. The biological section of the purification plant in Tallin is being built by Finnish-Estonian forces and is expected to be completed in October. As a result of this construction work the problems caused by waste water in the Gulf of Finland are expected to decrease considerably. Organic substances ought to decrease by 75 percent in comparison with the 1991 level.

Pietikainen ended her visit to the Baltic states in Tallin yesterday. Before Tallin her visits included the Lithuanian nuclear power station at Ignalina, and the city of Riga's water purification plant in Latvia. In Estonia the Finnish delegation's visits included the power stations in Narva and the pool of radioactive waste in Sillamae.

In Tallinn yesterday Tarand gave assurances that the waste pool does not represent a danger to people. On the other hand, there is a risk that the pool will spread out in the Gulf of Finland since there is only a 20-meter-wide strip of land dividing the pool from the sea. Attempts will be made to solve the problem with Nordic help.

Estonia: Russian Ammunition Depot Said To Pose Threat

WS2807105293 Tallinn ETA NEWS BULLETIN in English 0706 GMT 28 Jul 93

[From 28 July RAHVA HAAL, p 3]

[Text] Wednesday, July 28—Personnel of the Tallinn Fire and Rescue Department visited the Russian Army depots at Astangu on July 26. The situation there is depressing, the delegation commented. The depot contains 1,000 tons of trotyl hexogen and 5,470 tons of other explosives while only 6 carloads, 40 tons each, are evacuated every month. It is vital that the Estonian government subsidised the removal, the Rescue Department officials stressed. A possible fire may result in an explosion which might require rescue operation all over Tallinn, the statement warned. The statement was signed by Raul Haaristo, Deputy Director of Tallinn Fire and Rescue Department.

REGIONAL AFFAIRS

EC Environmental Advisory Councils Seek Cooperation*BR2307085693 Groot-Bijgaarden DE STANDAARD in Dutch 17-18 Jul 93 p 2*

[Article signed "AW": "EC Environmental Advisory Councils Seeking Permanent Cooperation"]

[Excerpts] Brussels—At the beginning of Belgium's EC Presidency, the Flemish, Walloon, and Brussels environmental councils brought together, for the first time in EC history, the environmental advisory councils of the member states where they already exist. The countries in which such councils have not yet been established sent observers. For two days, there were discussions about the impact that the national and regional environmental advisory councils should have. [passage omitted]

Laurens Brinkhorst, director-general of the EC's environment directorate, delivered the closing speech. He emphasized that Europe's environmental policy is in a "transition period."

On the one hand, we are in an era shaped by the World Environmental Summit in Rio de Janeiro, where it was concluded that environment and economic development go hand in hand. On the other hand, Europe is faced with its deepest economic recession since World War II. There are cost savings to be made, and many companies are gasping for breath.

The economic recovery plan that the EC will propose is based on a new development model, in which economic development and environment are closely linked. The EC refuses to slide back into old patterns, in which food is subordinate to ethics. In present-day terms, this would mean that pollution is subordinate to ethics, Brinkhorst says. Environment, employment, and economic growth are compatible with each other, he added.

Brinkhorst admitted that there is presently much uneasiness in Europe. He expressed hope that the Belgian presidency would reverse this situation. He was pleased to hear that Prime Minister Dehaene and Foreign Minister Claes feel the same way. He used the metaphor of the Magdeburg hemispheres.

In his opinion, it is a vital task to join both hemispheres, so that they become inseparable. Neither the economic crisis nor environmental problems can be solved by national governments alone. Quite often, regions put European cohesion in a better perspective, because they are a third partner, the director-general argued.

Europe's environmental policy cannot take shape if it comes exclusively from the top. That is why the EC Commission is working on more democracy and transparency. The Fifth Environmental Action Plan is therefore partly based on shared responsibility, and intends to assign a more significant role to advisory organizations, which could make a substantial contribution to Europe's environmental policy. The establishment of the Advisory Forum is at hand, Brinkhorst stated. The Forum is

designed to be as representative as possible, without prejudice to the officially elected EC institutions, he concluded.

DENMARK

Businesses Join in Environment Effort*93WN0509B Copenhagen BERLINGSKE TIDENDE in Danish 24 Jun 93 p III 1*

[Unattributed article: "Environmental Association Formed"]

[Text] A number of Danish businesses have established an association that has as its objective to increase business awareness of preventive environmental measures. The association is called the Industrial Leadership Forum for the Advancement of the Environment (E.L.M. Danmark) and has its own offices at Brodrene Hartmann A/S.

The association will, first and foremost, arrange a series of informational meetings on preventive environmental measures. A number of large concerns such as Lego, KEW Industries, Coloplast, Glasuld, and Brodrene Hartmann will play host to the meetings and will share their experiences on the environment.

New System To Cut Emissions for Power Plants*93WN0509C Copenhagen BERLINGSKE TIDENDE in Danish 30 Jun 93 p 6*

[Article by Janni Andreassen: "Cooperation on Cutting Smoke Emissions"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] FLS Environmental and Electric Power have combined to work on a new smoke filtering technology for coal-fired power plants. The next step is construction and marketing.

A whole new type of smoke filtering plant which removes most of the smoke's sulfur dioxide and nitrous oxide will be developed at Denmark's Technical High School's thermal power plant.

The plant is based upon a U.S. concept, undertaken by the Noxso Corporation, a research company, with whom FLS Environmental entered into a joint contract a year ago.

During the technical process of filtering the smoke, it is possible to separate the pure, salable materials. Thus sulfur dioxide can be transformed into chemically pure sulfur, sulfuric acid, and sulphur oxide. The nitrogen oxides break down into nitrogen and oxygen without use of additives. No residues remain to dispose of.

The plant will go into operation in 1994 at Denmark's Technical High School where the results of the U.S. technology will be tested. If the results live up to expectations, the smoke filtering plant will be constructed and marketed at FLS Environmental.

"We have permits for the entire European market and for East Europe and a couple of countries in the Far East," said Stig Bue Lading, director of development at FLS Environmental.

The smoke filtering plant removes 99 percent of the sulfur dioxide in smoke and 90 percent of the nitrogen oxides. These are figures which Electric Power and FLS Environmental will now proceed to test at Denmark's Technical High School. The total cost for the entire project is a good 30 million kroner, which will be shared by the joint partners.

Energy Ministry Urges Greater Wind Power Usage

93WN0509E Copenhagen BERLINGSKE TIDENDE
in Danish 30 Jun 93 p 5

[Article by Kaj Skaaning: "Ministers Press Districts for More Wind Power"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] The energy and environment ministers will put out circulars directing the districts to initiate wind power within a specified time period in the near future.

Joint pressure from Energy Minister Jann Sjursen (Christian People's Party) and Environment Minister Svend Auken (Social Democrat) will serve to pressure the districts into implementing the planning that is necessary to expand wind power in Denmark.

The districts have had problems in realizing the necessary local plans needed to establish a basis for locating the windmills.

Response

Sjursen has now said in a response to the Organization for Continuing Energy that he agrees with Auken that a circular should be issued to promote the process.

"I agree with the organization that the expansion of wind power is not proceeding as quickly as could be hoped," said Sjursen.

"This can be blamed, among other things, on the fact that district planning is progressing very slowly. There is, therefore, a need to institute a change in district planning in those districts which have still not made plans for locating their windmills. Such planning will produce more precise guidelines for continued expansion."

On the other hand, Sjursen does not share the organization's view that the energy minister's announcement concerning the connection of wind power plants to the electricity network will hinder expansion.

"Naturally I am aware that 'free' connection of the windmills to the network cannot be realized right away in a responsible economic manner in many cases, but we have by way of decisions arising from legal actions already spelled out the conditions for connection," said Sjursen.

Old Windmills Out

An executive committee under the leadership of the Energy Board has just delivered a report to the minister. It deals with how the replacement of old and poorly placed windmills can open up further potential for wind power.

The report concludes that replacement cannot be accomplished unless economic incentives are established for windmill owners.

"I will now ask the Energy Board to work further on creating the necessary administrative basis for providing guidelines for removal of old and poorly placed windmills," said Energy Minister Sjursen.

Danes Willing To Pay for Cleaner Environment

93WN0509A Copenhagen BERLINGSKE SONDAG
in Danish 4 Jul 93 p 5

[Unattributed article: "Danes Are Ready for Environmental Taxes"—first paragraph is BERLINGSKE SONDAG introduction]

[Text] A majority of those asked were in favor of taxes for improving the environment, but were against going as far as doubling the price of gas.

A slight majority of Danes are supporters of an environmental tax on gas, but against the idea of a doubling of the price of gas for the sake of the environment.

Environmental taxes on water and electricity are supported by a bit larger majority, while a proposed environment-related road tax gets a mixed reception.

These are the chief results of a new survey which Gallup undertook for BERLINGSKE TIDENDE. The survey is based on 1,105 telephone interviews using a representative sampling of the Danish population and was carried out during the period between 17 and 21 June of this year.

Favor an Environmental Gas Tax

The government's tax reform contains a number of environmental taxes on gas, diesel, coal, electricity, water, and garbage which will become effective in the coming year. Beginning in 1994, an environmental tax of 20 ore per liter will be imposed on gasoline, rising to 93 ore over five years.

Queried by Gallup, 50 percent supported an environmental surtax on gasoline, while 41 percent were opposed to it.

Support for an environmental tax is greatest among left-wing voters, 74 percent of whom approve of it, but there is also a large majority among Social Democratic voters, some 58 percent.

Among nonsocialist voters there are just as many for as against the environmental gasoline tax.

Automobile owners are divided, with 49 percent supporting and 48 percent opposing the tax. Among those

who do not possess a car, there is less opposition. Only 27 percent are against the tax, while a full 53 percent favor it.

Favor Water and Electricity Tax

The tax reform also contains a higher environmental tax on consumption of water and electricity. A majority of 53 percent support this tax, while 39 percent are opposed and 8 percent are undecided. The most positive attitude to the water and electricity tax is found among managerial staff (64 percent in favor), civil servants (68 percent in favor), and among people with higher education (72 percent in favor), while most of its opponents are in the age group over 50 years (46 percent in favor, 47 percent opposed) and among Danes who have only a high school education (41 percent in favor, 47 percent opposed).

Gallup also asked to what extent the respondent believed that environmental taxes on water and electricity would be effective in reducing the consumption of these two resources.

Some 46 percent answered that they believed they would consume less, while 49 percent answered that they thought they would not consume less.

Among the supporters of the taxes on water and electricity, 58 percent responded that as a result of the tax, they would use less, while 39 percent responded that they would not.

Of those opposed, 32 percent responded that the tax would cause them to use less, while 65 percent did not believe the tax would cause them to reduce their consumption.

Against 12 Kroner for Gas

A layman's group appointed by the Technology Committee has proposed that taxes on automobile use should be altered in a more environment-friendly direction.

One of the group's proposals is to raise the tax on gasoline to 12 kroner a liter, while at the same time reducing significantly the registration and weight fees on automobiles. That is, to make cars cheaper and gasoline more expensive.

Of the Danes questioned, only about a third, 32 percent, feel this is a good idea, while the majority, 54 percent, find the proposal a bad idea, and 13 percent are undecided.

Opposition to the idea is greatest among nonsocialist voters, of whom only 27 percent are in favor while 63 percent are opposed, but also among Social Democratic voters there is a clear majority of 54 percent that is opposed, with only 31 percent in favor. Among the left-oriented voters, in contrast, there is a majority of 53 percent for the idea of cheaper cars and more expensive gas. Here, 37 percent were opposed.

Undecided on Road Taxes

The layman group's proposal also includes a special road tax on places where automobiles are a special hindrance or where it is easier to use public transportation instead of a car. This portion of the proposal has a bit more support, but the public is nevertheless divided, in that 47 percent of those questioned feel that a tax of this kind is a good idea, while 43 percent feel it is not a good idea, and 10 percent are undecided.

The idea has the support of a majority of Social Democratic voters (51 percent in favor, 38 percent against) and left-wing voters (68 percent in favor, 27 percent against), while a majority of the nonsocialist voters do not like it (41 percent in favor, 50 percent against).

Likewise, a majority of civil servants like the idea, while a majority of those employed in private business do not feel that it is a good idea. Among car owners, there is a not unexpected resistance to the idea of road taxes, whereas a majority of nonowners support the idea.

Opposition to a road tax appears, in general, to be greatest among groups in the population that are likely to be affected by it and least from those who do not expect to be affected.

Radical Taxes Must Wait

All in all, the survey shows that a slight majority of the Danish public is ready to accept special taxes related to the environment.

The public, however, is not disposed at the present time to allow environmental taxes to become as extensive as the layman's group proposed.

Radical taxes, as for example, a doubling of the price of gasoline, must wait for some years, if enacted at all.

Danes Ready for Environmental Taxes

Public Opinion in Percentage	Favor	Oppose	Undecided
20-Ore Surtax on Gasoline	50	41	9
Tax on Water and Electricity	53	39	8
Higher Gas Tax/Lower Auto Fees	54	32	14
Road Tax Where Autos a Hindrance	47	43	10

FINLAND

Paper Industry Acts To Halt EC Environment Tax

93P20206A Helsinki HELSINGIN SANOMAT
in Finnish 5 Jun p B 6

[Article by: Pentti Laitinen]

[Editorial Report] Finland's tree growers and pulp processors are most worried about movement under way in the Community's bureaucracy in Brussels that would allow each country to impose a tax on paper products made from new materials. With Finnish accession into the EC anticipated by 1995, the paper industry is concerned that environmental proposals currently being readied within member countries would adversely affect exports. The goal for the tax policy is to raise the cost of new paper in order to make the use of recycled paper more advantageous, thus easing pressure on landfills. The regulations being considered specifically refer to imported paper made with the use of predriers. Since virtually all Finnish paper products are manufactured with a process using predriers, exporters say the blow to sales in what is their largest export market would be devastating. Some EC member countries have already started to take action on their own in anticipation of Community approval. A bill being considered by the Belgian parliament, for example, provides for such a tax.

The Finnish Association of Forest Producers hopes to head off the tax by convincing the EC bureaucracy to tackle the waste problem by studying more positive incentives to recycle. Citing the experience of Finland, which recycles almost all its wastepaper, a spokesman for the association claimed that one thing which should be done is fund research aimed at finding products which could be made from wastepaper in consumer countries, thereby increasing the incentive to collect wastepaper instead of sending it to landfills. The spokesman also expressed doubt that a tax on the import of predried paper would have the intended effect, speculating that it would only raise cost for consumers and encourage production of virgin paper instead of increasing use of recycling.

The spokesman was optimistic that Finland would be able to head off this plan while still at an early stage of discussion in the EC bureaucracy.

Russia's Sulphur Pollution Affecting Finland, Norway

93EN0685C Oslo AFTENPOSTEN in Norwegian
1 Jul 93 p 4

[Article by Ole Magnus Rapp: "Russian Sulphur Killing Norwegian Soil"]

[Text] Thirteen hundred square kilometers of Norwegian soil are damaged by pollution from Russia, according to a new study.

Tromsø—The nickel factories in the cities of Nikel and Zapolyarnij at the border to South Varanger spew forth

annually nearly 300,000 tons of sulphur and heavy metals, such as copper and nickel.

Researcher Hans Tommervik at the Norut Research Institute in Tromsø has by means of satellite pictures and field studies followed the development for the past 20 years. Now he is sounding the alarm. In the course of the past 10 years, the area destroyed by air pollution has become 14 times greater, from 55 to 760 square kilometers.

About 1,300 square kilometers of Norwegian soil are clearly marked by air pollution. On the plateaus of South Varanger the reindeer moss is gone, the forest is stunted, and the fishing waters are dying. Areas with gravel and rocks are growing.

The three nickel works within a small area on the Kola Peninsula spew out six times more sulphur each year than Norway's total sulphur emission.

In 1973, international satellites began to photograph systematically the earth's most polluted areas. Tommervik has concentrated on a 10,000-square-kilometer area along the borders between Russia, Norway, and Finland. He has recently completed a research project on the effect of air pollution there and has found that the sulphur emissions have clearly affected the vegetation within a 5,000-square-kilometer area.

"Satellite pictures are an objective documentation of a shocking area of damage," he said.

"The damage to the environment has spread more rapidly and to a greater extent than was previously assumed. This must be a serious challenge to the political authorities in Norway, Finland, and Russia," he said.

He stressed that there is still much undisturbed nature on the Kola Peninsula. Up to now, only 15-20 percent of the peninsula is marked by pollution.

Tommervik is a member of the group of experts connected to the Norwegian-Russian Environmental Commission. Russian authorities and researchers are also greatly concerned about the development and say that they need economic and technical help from the West to clean up the emissions.

Norwegian and Finnish authorities have agreed to grant funds for cleaning measures. Up to now, little concrete work has been done.

The nickel works on the Kola Peninsula were established by Finnish and Canadian interests in 1933. After 1944 the factories were taken over by the Russians, and up to 1973 the sulphur emissions never exceeded 100,000 tons. Up to then, the raw material was a local nickel ore, but when the deposits began to diminish, the Russians began to get ore from Norilsk in Siberia. This ore contains six times more sulphur than the local ore and has led to a drastic increase in air pollution.

In 1979, emissions were over 400,000 tons, while in 1988 about 273,000 tons were measured. The reason for the decline is that there has been less production. To get

more "environmentally friendly" raw material, plans are now being worked out for an underground factory in the Nikel area. Previously there has only been open-cut mining here.

FRANCE

Barnier Discusses Environmental 'Economic Logic'

93WN0504 Paris LE MONDE in French 7 Jul 93 p 9

[Interview with Environment Minister Michel Barnier by Roger Cans; place and date not given: "An Interview With Michel Barnier"]

[Text] *The minister of environment told us: "The environment must be put in a context of economic logic."*

Shunning environmental theatrics, the new minister of environment, Michel Barnier, is drawing up a bill that will define a new division of jurisdictional responsibilities between the state and local communities with respect to the environment.

Cans: A year after the Earth Summit, you attended the first meeting, in New York, of the Committee on Durable Development, which was set up to follow through on the work done in Rio. What impression did you derive from that meeting?

Barnier: We were all somewhat concerned about that meeting. The cause of the environment remains popular, but is it still accorded priority? I was favorably impressed by the new climate that has been building up between the South and the North. We debated without subservience but without aggressiveness. The spirit of Rio is truly still with us. None of the agreements reached at the Earth Summit have been challenged, neither those on the climate nor the one on biodiversity that the United States finally accepted. Consideration is even being given to pressing on still harder with the fight against desertification.

Cans: What is France's message?

Barnier: Since economic realities are harsh, we must be very careful. It is not easy to defend the environment in these times. France's representatives and their head of delegation, Jean Ripert, insisted that the Commission play a permanent role as a worldwide political force. France has committed itself to continuing its aid for water resources, urban development, and the development of forests. Several countries will form working groups on specific issues. Next year, France will call a meeting of a working group on water resources and health in disadvantaged urban sectors. This round table will bring together experts from interested countries such as, for example, India, Morocco, Tunisia, Senegal, Egypt, and Colombia, as well as representatives of the principal players in the realm of global cooperation, the United

Nations Program for the Environment, nongovernmental organizations, local communities, and enterprises. This round table will be expected to draft concrete proposals for the next meeting of the Permanent Commission on Durable Development in May 1994.

Meanwhile, the French Commission on Durable Development will be set up as of this summer. It will work with the general commission. For my part, I pressed very hard on the need to greatly increase instances of decentralized cooperation among the South, East, and North. When the department of Savoie helps Casamance, it is something concrete and, above all, easily perceived. The people know where their money is going. These initiatives must be increased.

Cans: You attended the European ministers' second meeting on the environment held in Luxembourg on 28 and 29 June. How is Europe faring in relation to the environment?

Barnier: Despite the crisis, the European Community's environmental cause is making headway. It is progressing also on a realistic and pragmatic scale. The three guidelines adopted at Luxembourg regarding utilitarian vehicle emissions, the stockpiling of fuels, and the incineration of dangerous wastes point in the right direction. Medical wastes will be able to be burned in incinerators used for the disposal of household disposal, but under specific and tightly-controlled conditions. The Germans have agreed to it. They have also agreed that their DSD [Dual System Deutschland] for the recycling of packaging materials upsets the collection of wastes in all of Europe, since their old cartons and plastics can be found in neighboring countries, not only in ours. If nothing is done to institute good order, we shall be forced to implement national measures to control imports of recycled cartons and paper into France.

Squandering and Pollution

But what is much more worrisome is Europe as whole, the Europe that met recently in Lucerne to discuss the state of the environment in the countries of central and eastern Europe. What is being done there currently is not enough. The funds that have been committed over the past two years have not done the job. There are 16 Chernobyl-type nuclear sites in the East, without counting abandoned nuclear submarines. If we do not want to have to deal with another nuclear catastrophe, then we must get together on a truly "European environmental safety initiative." This is part of the stability of Europe. We beat our heads against the wall in France over the CO₂ [carbon dioxide] and CFC [chlorofluorocarbon] emissions, while only a few steps away from our homes plants spew their pollutants into the environment without restrictions. How many of our readers know that the wasting of natural gas in Russia by way of leaks in the installations equals the Netherlands' annual consumption? Pollution and the loss of resources merge. Corrective action can remedy the problem. In this area of endeavor, the return on investment is very quick: three

or four years. It is in this respect that action must be taken, against waste as well as for nuclear decontamination.

Cans: In regard to energy waste, what do you think of the "environmental tax?"

Barnier: The environmental tax is one of the tools that we expect will help us stabilize the emission of gases causing the greenhouse effect, by the year 2000, in accordance with the commitment we undertook at Rio. The goal is a very difficult one to achieve. But I think that taxation is very useful in bringing about changes in behavior. With the increase in the price of fuel in France, we have already taken substantial steps in the right direction.

The difficulty lies in the basing of the environmental tax; that is to say, the apportionment of the burden. France, which favors the environmental tax, does not want to tax energy consumption that in our country would penalize nonpolluting energy sources such as hydraulic or nuclear. Great Britain does not want any tax, either on energy or on CO₂ emission. This issue must therefore still be debated. I shall be meeting with Mr. Paleokrassas, the European Commissioner, on 27 July to discuss new proposals. In any case, a policy on taxation must be agreed upon by the Twelve. I agree with Jacques Delors on this point. There are too many taxes on income and labor and not enough on nonrenewable natural resources. We tax real estate, we are beginning to tax water, but we do not tax the abusive use of clean air.

Cans: Do you have any plans for France?

Barnier: First of all, we must digest the laws, often hastily drafted, that have been promulgated under the previous legislatures. At least 50 decrees were lacking for implementation of the laws on water, waste, noise, the landscape, and quarries. I have devoted a great deal of effort to these aspects since taking office. Later on, my objective is to clarify jurisdictional responsibilities. Who does what on the subject of the environment must be clearly stipulated. To be stronger, the state must do less and do it better. In particular, the regions could take care of Class I industrial waste and leave the other waste to departments and municipalities. Schools and social services were entrusted to departments. Why, then, should we not assign to them additional responsibilities for the protection and management of resources, waste, and the environment? The 1982 (decentralization) law entrusted the management of the environment, together with responsibility for the POS [Land-Use Plan] to the mayors. But the POS does not really take care of the protection of nature.

Departmental Plans

The protection of the rural environment and of natural surroundings has a dimension that surpasses, and by far, the municipal level. Therefore, after the necessary consultations with the other ministries concerned and the associations of elected representatives, I am going to propose the instituting of a departmental plan for the

protection of nature and of natural resources," to be drawn up under the authority of the prefects in consultation with the communities. A kind of departmental POS that will clearly manifest concern for the protection of natural surroundings.

Presently, a council president, generally speaking, is incapable of identifying, on the map of his department, the areas that are protected in one respect or another. Some are protected for their flora and fauna, others for the beauty of their location, others for their structural and archeological assets. Other areas cannot legally be built on by reason of natural danger or the presence of a hazardous installation. We must lay all of this down flat, on one and the same map, so as to see what is compatible or contradictory. These departmental plans must of course be harmonized among themselves on the regional level.

Cans: Will this, then, be a new bill?

Barnier: In effect, this will be a new clarifying, simplifying, and decentralizing bill. I hope that it will be ready, with the agreement of the Ministry of Interior, by spring of 1994. But I also have other plans that are already under way. I have entrusted to Jean-Francois Legrand, senator from La Manche, the mission of reflecting upon two of our country's major injustices. On the one hand, our farmers are not paid for the public service they render by maintaining the soil and the countryside; and on the other, the communities that protect their environment are penalized versus those that build. These two injustices could be compensated for by a kind of activities tax for the protection of nature. This is a point that should find its place in a local tax reform.

I have also asked Bruno Heintz, chief executive officer of the Ecobilan company, to form a group of experts to work out a strategic plan on the environment. My desire is to assimilate the Ministry of Environment into an economic logic and a positive viewpoint, shedding its exclusive role of environmental watcher and pusher of the alarm button. I am convinced that the more concern there is about the environment, the more will be the employment generated. A poor quality environment is moreover a generator of social injustice, and, sometimes, of rebellion. A high quality environment is an element of social unity. When work or buying power cannot be distributed, quality of life must be provided. This is why I have very much appreciated the fact that Simone Veil agreed to allocate to me 500 million francs from her city budget to improve the urban environment.

Cans: When you arrived at the Ministry, you found on your desk the aggravating file on Somport, the Pyrenees tunnel project that is being opposed by the environmentalists. At what stage is the project?

Barnier: I went to those valleys to listen, to discuss, and to see. I went alone without microphones or cameras, so as to preserve the nature of a dialogue and mutual respect. No minister had really done this in 22 years. I learned a lot. The Pyrenees's elected officials and the shepherds are the first not wanting to destroy their

valley. But they also want to live. The tunnel is desired. We will see what the public inquiry will conclude. It is to be a two-lane tunnel and free of charge to users, which will permit its being closed to trucks, should the need arise, without loss of revenue, whenever the local officials wish to do so. The road will be widened, but will continue being a two-lane highway with some sections enlarged to three lanes for passing. It will never encroach upon the territory of the railroad system, which must be able to be reactivated if the need arises. Many problems have arisen from a lack of consultation. The environment cannot be decreed. I strongly believe that if we talk to each other we shall one day be able to reintroduce the bear. We will start doing this next year in the central Pyrenees. I have signed an undertaking in this regard in Haute-Garonne. Generally speaking, there will always be fundamentalists on both sides of the environmental issue. But we can and must institute a dialogue between the others.

In the future, fewer public funds must be allocated to highways and more to railroads, to purification plants, and to the quality of life. We have before us tax and budgetary changes and choices that will be difficult and, at times, unpopular. But the protection of our resources, our earth, and also our children is at stake. A drastic change is needed. Politics will not be able to skirt this issue over the next ten years.

GERMANY

Siemens-Developed Buoy Detects Waterway Pollution

BR2307082493 Bonn *DIE WELT* in German 1 Jul 93
p 7

[Text] A recently developed buoy known as Merlin is to monitor future water quality in rivers and lakes. Merlin is around 1.2 meters high, and has a diameter of 80 centimeters; it looks like a 200-liter oil barrel, but contains highly sensitive measuring equipment.

Merlin's sensors provide round-the-clock records of six parameters crucial to water quality: Oxygen and ammonium content, cloudiness, temperature, conductivity, and pH value; these data are relayed by radio to a terminal. If the preset limits are exceeded, then an alarm is activated with the river or lake police or the environment authority.

Merlin can be used flexibly in a variety of waters, according to need. The Sherlock measuring station, on the other hand, is designed for long-term monitoring: The container holding the measuring equipment is permanently installed on the bank of the river or lake, with wires leading from the sensors into the water.

Merlin and Sherlock are powered by batteries or solar collectors: The two environmental detectives were developed at Siemens' laboratories.

Agreement on Environmental Cooperation Signed With Iran

LD2407103193 Tehran *IRNA* in English 0915 GMT
24 Jul 93

[Text] Bonn, July 24, IRNA—Iran and Germany concluded a protocol for cooperation in the field of environment here Friday at the end of the first joint coordinating meeting on environmental cooperation.

The agreement was signed for Iran by Deputy Environment Organization [Head] Naser Moharamnejad and German Minister of Environment, Natural Conservation and Nuclear Safety Klaus Topfer.

The seven-project agreement focuses on such areas as protection of the ozone layer, research cooperation in the Persian Gulf and the Caspian Sea, air pollution in Tehran and solar energy. It also deals with purging rivers in Iran by giving priority to Zayandehrud in Esfahan, central Iran.

Following the conclusion of the agreement, Moharamnejad termed the outcome of the meeting as "quite successful," adding this was Iran's first experience in environmental cooperation with a European country. Officials from Iran and Germany had so far had three meetings on bilateral cooperation in the field of environment, said Iran's ambassador here Hoseyn Musavian. Topfer has visited Tehran twice during the past three years and three letters of understanding were signed by the two countries in the course of the last year visit to Bonn of Vice-President and Head of the Environment Protection Organization Hadi Manafi.

The next coordinating meeting will be held in Tehran in fall 1994.

NORWAY

Storting Approves Bio Convention Ratification

93EN0590Y Oslo *AFTENPOSTEN* in Norwegian
28 May 93 p 4

[Article by Sveinung Berg Bentzrod: "Ratification of Bio Agreement; Norway Follows Up Rio Conference"—introductory paragraph in boldface as published]

[Text] Norway will ratify the huge 'bio' agreement from the environmental conference in Rio, the second of the world's industrial nations to do so.

The ratification papers will be put before the meeting of the cabinet ministers prior to being sent to the UN secretary general. However, once it gains the approval of the Storting, where it is now pending, Norwegian confirmation of the treaty is assured. So far, 162 countries and the EC have signed the agreement. It does not become effective until 90 days after the highest authorities of 30 nations have ratified it. The bio convention, which is also called the UN Nature Conservancy Agreement, sets limits on the extent to which individual nations can manage their biological diversity. It also stipulates that

those who acquire natural resources from other countries must pay in cash, technology, or knowledge.

Canada is the only industrial nation among the 17 nations that have already ratified the agreement. The goal of the Rio conference was to reach 30 before the anniversary of the agreement, but this is hardly likely.

The Norwegian ratification coincides with the international environmental conference that ends in Trondheim today. The delegates from approximately 80 countries have been discussing the follow-up to the bio agreement. The chairman of the conference, Peter Johan Schei of the Environmental Protection Ministry, feels the conference was a success. The informal talks among approximately 300 politicians, civil servants, and scientists created a favorable climate for the time when the agreement will be developed into a concrete body of law.

The conference in Trondheim has shown that both scientists and politicians wish to get away from focusing on particular species in the effort to preserve nature's diversity. From first to last, the delegates stressed the mutual interdependence between plant and animal species. Humans, to a much higher degree than formerly, must look upon their relationship to the ecosystem as an integrated whole.

"In view of this, it would have been especially painful for Norway, as the organizer of the conference, if the government and the wolf had lost the battle in the Odelsting earlier this week," said Schei.

On Monday, a new UN project will be established in Trondheim. Some 26 emissaries from many corners of the world will gather for the purpose of forming a commission on global biodiversity assessment. The organization, under the auspices of the United Nations, will chart and accumulate all information that may be found on world biodiversity.

International Yardstick for Industrial Environment
93EN0620Z Oslo AFTENPOSTEN in Norwegian
14 Jun 93 p 22

[Article by Torsten Ostensen: "Norway To Develop New Environmental Standards"—introductory paragraph in boldface as published]

[Text] Norway has now been given the responsibility for developing international standards for a business environmental profile.

In a few years the world will have environmental standards that are at least as important to industry as the international quality standards in the ISO 9000 series.

At a meeting in Canada in the beginning of June, Norway, in sharp competition with the United States, was given the responsibility for a committee to develop standards for a business environmental profile. The intention is for this to become a set of commonly accepted criteria that companies worldwide can be measured against.

"We are quite proud that Norway has acquired an international platform that makes it possible for us to participate in laying the foundation for this work," says the administrative director of the Norwegian Standardization Association, Ivar Jachwitz.

The fight to secure the important positions in the forthcoming international standardization work took place among the large industrial nations.

Besides the United States and Great Britain, Norway came out the most successful. But Germany, France, the Netherlands, Sweden, and Australia were given different tasks. Altogether 29 countries with a total of more than 200 participants met in Canada.

According to Jachwitz, Norway was successful because the Department of Environmental Protection, the Confederation of Norwegian Business and Industry, and many of the larger Norwegian companies have all given their support that will enable Norway to take on such a responsibility.

"In contrast to the polarization one often sees between Norwegian environmental authorities and companies in environmental questions, in this connection we have very positive cooperation," he points out.

The United States as Force Behind

The United States was represented by 40 delegates at the meeting in Toronto while Japan had 20. According to Jachwitz this shows how large and heavily industrialized nations concentrate on this work.

"It is obvious how U.S. industry has become engaged in environmental issues. It is clear that in the United States it is expected that industry itself makes a proper effort to further this work," he says.

Jachwitz says that we will see real results within two to three years, and that this must be considered a very short time.

"Rules for standardization of what can be called environmental policies will come first. Then environmental profile standards will come, that is regulations describing how to judge the environmental safety of the production process of a company. Here we include, among other things, the use of nonrenewable resources and energy sources," he said.

The Norwegian foundation "European Green Table" has, according to Jachwitz, made very thorough preparations for the standards now under way. Norway has achieved unique cooperation with U.S. and Japanese industry for development in this area.

"We have played an active role in order to enable Norwegian interests to have an influence on this work so that the standards will be developed in such a way that both Norwegian authorities and Norwegian industry will have a set of international rules that will fit Norwegian conditions."

"In other words, we will be let off lightly?"

"No, that is not the point. Norway has strict environmental requirements in this connection. With our newly assigned responsibility our contribution can be to influence international requirements in the same direction."

Start of Commercial Whaling Described

93EN0620Y Oslo AFTENPOSTEN in Norwegian
14 Jun 93 p 12

[Article by Ole Magnus Rapp: "Harvesting of the Whale in Large Area"—introductory paragraph in boldface as published]

[Text] The whale hunters have the local population, the police, and the military behind them—and the ocean area where they hunt the whale is enormously large.

With the odds on their side, 28 whaling vessels are presently leaving Nordland heading for the coast of Finnmark. In the course of a month they will have caught 160 minke whales. Each vessel is between 50 and 75 foot long, has a crew of four, and carries an inspector representing the Norwegian authorities.

The whaling will take place in the enormous ocean area north of Finnmark. The border with Russia in the east, Greenland in the west, and the edge of the polar ice cap at Svalbard in the north are the limits around this year's whaling. Harvesting in Lofoten and the Vestfjord is not permitted.

Potential demonstrators with questionable intentions will have a hopeless task. To find a 50-foot whaling vessel in the Barents Sea is more difficult than finding the proverbial needle in the haystack.

The military keeps tabs on all shipping and knows from previous experience which vessels potential demonstrators have bought or rented. They keep Norwegian territorial waters under surveillance using planes, radar stations on land, and a number of naval vessels. The Coast Guard's first priority is to make sure that Norwegian legal activities can be carried out without interference. Nine Coast Guard vessels are now patrolling the coast of North Norway. They will take strong measures should anyone try to interfere with the whaling.

Where Is Watson?

Only the Sea Shepherd has threatened to carry out sabotage against the whaling vessels. Greenpeace is also against whaling and adherents have already chained themselves to the whale harpoons. Many environmental organizations have also given verbal support to opponents of whaling.

So far Paul Watson and the Sea Shepherd have not arrived at the arena for this year's whale harvest. No one knows for sure where Watson is. He has been in Scotland where he tried to buy a boat. Since then he has been seen at home in the United States.

No matter what, Watson will have problems carrying out what he promised to do in his press release of 1 May. At that time he reported on the Sea Shepherd's strong hand against the whaling vessels: the former naval vessel

Edward Abbey. The very fast 95-foot speedboat allegedly has a crew of 14 men and women, among them Swedes and Norwegians. Its goal is North Norway and direct action against the whaling vessels.

On the Way?

They started from the U.S. west coast with Paul Watson as the captain on 1 May and were supposed to arrive at Shetland five weeks later. So far they have not gone through the Panama Canal. At Shetland the Edward Abbey was to be accompanied by another boat, fully loaded with people from the media from Europe and the United States.

"We know that the Edward Abbey has not gone through the Panama Canal. The vessel's fuel tanks are not large enough to cross the Atlantic without refueling," says the information officer Zolvi Pedersen from Hoge Nord-Alliansen in Lofoten. "We also know that Watson tried to buy a boat in Scotland, without success."

Will Never Find Us

"Potential demonstrators will never find us at the fishing grounds," says the head of the Norwegian Small Whaling Association, Steinar Bastesen. "We know that both the police and the Armed Forces carefully follow all moves on both sea and land. That is why we will be able to carry out this year's whaling quite undisturbed. If everything goes according to plan and the weather is good, it should be possible to finish up this harvest within a month."

"If Watson and others of the same persuasion do not turn up soon, we will be finished with the harvest before they might arrive," Bastesen says.

The whalers are not satisfied with this year's quota. Several vessels withdrew because four to five animals would not yield sufficient income. Everybody who is now going to the fishing grounds is hoping that a larger quota next year will make up for this year's quota.

Steinar Bastesen is the captain of the Havliner, which participated in the research harvest of minke whale. The four vessels have had a break now, but will start up again 15 June. Of a total quota of 296 minke whale, 136 animals have been earmarked for research harvest.

Eight fish receivers have gotten permission to buy whale meat. All of them are in Lofoten; four at Skrova, two at Myhre, and one each at Steine and Varoy. Every whale has between 1,000 and 1,500 kilos of meat, and the whole harvest is to be delivered to the licensed receivers. The whalers will receive 31 kroner per kilo.

IAEA Critical of Emissions Standards

93EN0685D Oslo AFTENPOSTEN in Norwegian
7 Jul 93 p 19

[Article by Yngve Hellestol: "IAEA Doubt Environmental Goals"]

[Text] Norway must change its energy policy so that their own goals for the stabilization of CO₂ emission can be reached, according to the International Atomic Energy Agency (IAEA).

The IAEA doubts that Norway will manage to reach its own goal of freezing CO₂ emissions at the 1989 level by the year 2000 with its present energy policy. It also criticizes the Norwegian model for the sale of gas. This comes from a new study the IAEA has done on Norwegian energy policy.

The Norwegian goals on CO₂ stabilization are more exacting than in other countries, but Norway will not manage to fulfil its own goals with the measures that are in effect today. Fees for CO₂ must be used more actively to reduce the use of energy sources that contribute to the greatest CO₂ emission. This is the message from the IAEA, which at the same time admits that Norway has made much progress in reducing sulphur emissions.

Norway must also consider increasing the export of electric power by means of long-range contracts. Norwegian export of electric power can contribute to reducing the emission of CO₂, according to the IAEA.

The IAEA praises Norway for "farsighted" restructuring of the electricity sector in the direction of more competition. At the same time, it points to the conversion problems that hit various participants in the electricity market. While customers can have lower prices, the electricity producers and distributors have experienced financial problems because of the lower prices and the reorganization of the sale of electric power.

The IAEA takes in a broad area of Norwegian energy policy and development in its study. It criticizes the arrangement with the Norwegian Gas Sale Committee and encourages the restructuring of Norwegian oil and energy policy in the direction of more free competition. The arrangement with the Gas Sale Committee, which has given Statoil, Norsk Hydro, and Saga control over the sale of all gas from the North Sea, is at present undergoing reworking by the Norwegians. In August a new supply committee will be established, which in addition to the three Norwegian companies also includes a series of foreign companies.

To assure the best possible operation and extraction of oil and gas in Norway, more emphasis must be placed on a nondiscriminatory policy between oil companies, according to the IAEA. It welcomes the restructuring of Norwegian oil policy in the direction of more free and open competition. The restructuring is going along with an international development in which governments are opening up for competition in new areas.

SWEDEN

Newspaper Views Need for Biodiversity Convention

Saving Sweden's Wetlands

93WN0472A Stockholm DAGENS NYHETER
in Swedish 30 May 93 p 5

[Article by Erika Bjerstrom: "Wetlands Protected by Law"—introductory paragraph in boldface as published]

[Excerpts] The tears in the fabric of life are becoming larger and larger: From 10 to 15 percent of the world's species are threatened with extinction. Many species are disappearing before science can get to know them, a circumstance that has been compared to burning down a huge unread library. In this series called "The Fabric of Life," DAGENS NYHETER will report on how politicians, economists, philosophers, and biologists are answering the question of what a bog is worth and how undisturbed rain forests have been turned into profitable investments.

Plant-rich alder fens ("Swedish rain forests") are going to be legally protected from lumbering operations. The government is expected to propose such protection in its legislative bill on biodiversity. Also to be protected are groves of hazel trees, forest springs, ravine forests, willow-lined lanes, and a long list of Swedish biotopes.

DAGENS NYHETER has learned that valuable biotopes of various kinds will receive the legal protection that conservationists have long been calling for. On 3 June the government will make a decision regarding the Ministry of Environment's bill on biodiversity. The intention is to bring the bill before the Riksdag before the summer recess. Sweden is thereby keeping the promise it made at the Rio de Janeiro conference on the environment: to intensify its efforts to rescue plants, animals, and their living environment from extinction.

Paragraph 21 of the Nature Conservation Act already stipulates that particularly valuable biotopes enjoy biotope protection. But so far that has been a meaningless paragraph because the law does not specify which biotopes are to be protected.

The government instructed the Ministry of Environment to determine which biotopes are to be protected, and the ministry has now recommended two kinds.

"Small biotopes will receive two kinds of protection," says Johan I. Bodegard, the official in the Ministry of Environment and Resources who is in charge of the bill on biodiversity.

The first category, which includes alder fens, will receive general protection, meaning that biotopes in this category will become nature reserves. It will be against the law to fell an ancient oak or cut away a small island on agricultural land. According to the Forestry Law, forest owners have the right to clear productive marshy forests of trees, but now they will lose the right to encroach on forests of less than two hectares.

Old groves of hazel trees, high-grade hardwood trees, willow-tree embankments (lanes with trees on only one side, typical of southern Sweden), small bodies of water in forest land, springs surrounded by wetlands where the groundwater flows out, small swampy islands and wetlands on agricultural land, stone walls, small islands on agricultural land, and cultivated cairns on farmland will also be protected.

The second category will be protected after the county administrative boards have delimited conservation

areas. This will involve older, plant-rich swampy forests, stands of hardwood trees resembling natural forests, plant-rich alder groves, ravine forests, tree-lined creeks, and swampy forests of high-quality trees.

of Swedish Nature

[Passage omitted]

Michael Lofroth, dressed in sturdy boots, walked ahead of me and cautiously tested every step. Finally he found a hillock that would hold his weight. The ground quivered all around as he moved. He has been studying swampy forests for 12 years, and he has spent a total of three weeks of his life just in this little forest on Bogesundslund.

Negative Ring

There was a tremendous amount of life in the foliage: Nightingales were singing, blackbirds were trying to imitate them, fieldfares and chaffinches were chiming in, and in the background could be heard the lingering drumroll of the woodpecker.

"It's still here this year, too," he said in a pleased voice.

Woodpeckers are threatened with extinction and need primitive forests with rotten logs in order to thrive.

Marshy forests have many names, most of which have a negative ring. Words such as "swamp," "sour hole," and "boggy land" make one think of mosquito-infested places smelling of decay.

In fact, however, wetlands are the lifeblood of Swedish nature—a nursery and granary for a myriad of insects and animals. In recent decades, they have constituted a mistreated and underrated biotope. The lumber companies were able to clear and drain large areas before conservationists sounded the alarm toward the end of the 1980s (see the background information below).

Exactly as is true in tropical rain forests, there are various niches of life in marshy forests.

Bouquets of yellow march marigolds gleam on the ground, while a little higher up, crab apples and sloes are blooming.

"Look here," said Michael as he bent over the root system of an alder.

"The alder has a sophisticated system of cooperation with bacteria. It gets nitrogen from the bacteria, which in turn get to live in the alder's tubers. The nitrogen-rich leaves then end up as nutrients on the ground, thus contributing to the rich plant life."

And over 60 percent of all forest plants depend on the marshy forest.

Marshy forests are part of the biotope classified as wetlands. They cover one-fifth of Sweden's area excluding lakes. They include some of the last undisturbed wilderness regions. Along with the mountains above the tree line, Norrland's bogs are the only biotope not affected by environmental pollution and the advance of man. Michael Lofroth has searched out all of Sweden's

wetlands for the National Environment Protection Board and recommended measures for preserving them. He has been traveling around Sweden looking for wetlands since 1982.

Most of them consist of marshy forests containing either fir or high-quality hardwood trees. The others are bogs, forest springs, coastal wetlands, fens, or damp moors. Many of them have disappeared.

Biological Filter

Large sums are now being spent to rehabilitate and restore wetlands, especially in southern Sweden. Wetlands function as biological filters by capturing nitrogen from cultivated fields before it runs into the sea.

The Swedish language bears witness to the importance of wetlands over the years. For many centuries people used the wetlands for forage and berry picking. There are more old Swedish words for wetlands than there are for snow, with many dialectical variations.

Man still has an ambivalent relationship with wetlands, and it is visible in the little marshy forest in Bogesundslund. Next to that forest is a campground where house trailers have been set up permanently. At the edge of the forest is a garbage dump containing old outdoor chairs and carpets.

Michael Lofroth says: "The only thing people know about marshy forests is that a lot of mosquitoes and gnats hatch here. But are they aware that it is thanks to the insects that we can also listen to nightingales sing?"

Lobby Backs Preservation

The preservation of marshy forests is the result of intensive lobbying by the World Wildlife Fund. It is also the result of informal cooperation between the state and environmental organizations.

During the 1980s, Lofroth noticed that marshy forests were disappearing at an alarming rate. The lumber industry had awakened to the fact that there were 150 million cubic meters of timber to be obtained from "the Swedish rain forests" and that new and fruitful timber plantations could be grown there once the marshy forests had been chopped down.

Forest Gives Life

Throughout the 1980s, 60,000 hectares of forested wetlands disappeared every year.

At the same time, research results were showing that marshy forests were a much more valuable biotope than had been realized. Inventories showed that 80 percent of all the vascular plants threatened or requiring attention in northern Sweden were directly dependent upon marshy forests.

Threatened Wetland

In 1989 the World Wildlife Fund was instructed by its parent organization in Geneva, the International Union for Conservation of Nature and Natural Resources (IUCN), to begin a campaign to save the wetlands. The

World Wildlife Fund in Sweden telephoned the Environment Protection Board and asked if the latter could suggest any other types of threatened wetland that the campaign could focus on. Lofroth answered:

"The marshy forests!"

The World Wildlife Fund began a campaign in which the negatively charged word "marshy forest" was replaced by "the Swedish rain forest." The entire campaign was conducted in emotional terms relating to rain forests: "the rain forest is bleeding to death" and "seven soccer fields are disappearing every hour."

"We cannot demand that the tropical countries protect their rain forests if we are not able to save our own." That was the argument used by the conservationists to win their victory over the lumber companies.

Subsidy Withdrawn

The government withdrew its drainage subsidy, which had been used to drain marshy forests, and at the same time, the National Forestry Board began an expensive inventory of all of the country's marshy forests.

Following successful efforts by the World Wildlife Fund to influence public opinion, the government is now proposing, in the spring of 1993, that several types of marshy forest be protected by law.

International Efforts Necessary

93WN0472B Stockholm DAGENS NYHETER
in Swedish 2 Jun 93 p 6

[Article by Erika Bjerstrom: "Nature's Diversity the Focus of Attention"]

[Text] Trondheim—The forgotten environmental problem—the extinction of plants and animals and their living environments—has suddenly become the focus of attention. Biologists, economists, and philosophers must develop economic arguments for protecting diversity.

When former U.S. President George Bush attended the UN environmental conference in Rio de Janeiro, he refused to sign an agreement to protect the biological diversity of nature. One year after the meeting in Rio de Janeiro, the convention in question appears to be that meeting's biggest success.

All at once, a rather unknown environmental problem became hot news. The United States had to explain its refusal, thereby revealing that it considers itself to have "intellectual rights" to the abundant species in tropical forests without having to pay for them.

Risk of Being Shamed

In all, 160 countries signed the agreement and pledged to produce plans for halting the depletion of plants and animals.

"The convention is a very powerful instrument. Countries that do not live up to their commitment will be shamed before the whole world every time there is a

review to see how the countries are living up to their commitment," says Ulf Svensson of the Swedish Ministry of Foreign Affairs.

He was chief negotiator for the convention, which is expected to take effect by this fall.

"Living environments are disappearing because economic interests carry more weight than the protection of nature. That is why nature must be assigned a value. A bog has only as much value as man places on it," says Karl-Goran Maler, an economist specializing in environmental accounting. He is thereby expressing a humanistic approach to nature that has been growing stronger and stronger.

On the other hand, those who claim that a bird has just as much right to exist as a human are accused of environmental fascism.

Utilitarian Arguments

Nowhere in the convention on biodiversity is there anything about nature's right to exist for its own sake. Nature is to be protected by the use of utilitarian arguments.

When 300 experts from around the world met in Trondheim recently, they spent an entire week finding answers to what is seemingly an obvious question: What do we want nature for?

The conference was sponsored by the UN environmental agency known as the UNEP [United Nations Environment Program] and the Norwegian Government. The argument put forward by the economists for protecting diversity is that we need the "ecological services" nature provides us with. This might be mushroom gathering or the fact that forests act as traps for carbon dioxide. Such services can be measured in kronor and ore and then compared to the value of other commercial interests such as the lumber industry.

Chanterelles have no known cancer-healing properties at the moment, but perhaps some medical researcher in the year 2017 will find a chemical substance in that mushroom which will solve the riddle of cancer. That is why, as a precautionary measure, we should protect the chanterelle's living environment, according to the argument put forth by biologists for preserving diversity in nature. The philosopher, on the other hand, talks about esthetic and moral reasons for doing so.

"Nature has always inspired and fascinated man; it is in the presence of creation's tremendous richness that we feel weakness and wonder," said Mark Sagoff, a U.S. philosophy professor.

"We do not want to save nature so that we can use it, but using it is one way to be able to preserve it," he says.

Poor and rich countries alike have agreed on two reasons for preserving diversity:

1. Existential reasons: the desire to leave to the next generation a natural world with possibilities just as great as those it had when we inherited it.

2. Productive interests: defending the basis for human existence.

Most of the delegates present in Trondheim were from developing countries. What biodiversity means to them is a chance to win new export markets.

Indian researcher Madhav Gadgil pointed out: "Those living in the richest areas from the biological standpoint are the worst off materially."

He divided the world up into biosphere people and people who depend on their ecosystems. Biosphere people live in the rich world and consume products from all over the globe without having to endure the consequences of the local environmental problems caused by kiwi crops or cotton fields.

"There is only one way to save the tropical forests," said Daniel Janzen, a professor of ecology who has devoted his entire life to research in Costa Rica's rain forests.

It requires "rescuing the forests from lumbering operations, finding out quickly what species are in the forests, and seeing to it that they start yielding an economic profit."

The tropics are a source of new vitamins, enzymes, fragrances and flavorings, fibers, and adhesives. Agriculture needs a living gene bank of wild plants, and the paper industry may need new kinds of pulp in the future.

It is therefore uneconomical to cut down a forest with 500 tree species in the Amazon region and replace it with a eucalyptus plantation.

The threat to biodiversity is essentially different from all other environmental problems, said Norman Myers of Great Britain, who is an author and a reporter on environmental issues.

"We may be able to fix the hole in the ozone layer within a hundred years. But it is not possible to repair the mass extinction of species."

"Biodiversity" has become a new vogue word in the environmental world.

It is a catchword that sells the message about saving the environment. The threat to biodiversity is actually the mother of the environmental problems. Efforts to ward off the threats facing mankind are all aimed at the same thing: protecting people's health and the continued existence of species.

No biologist claims that people need every existing species on earth for their survival. But neither is anyone willing to give politicians advice on where the threshold of pain lies with respect to a "basic supply" in nature.

"It is like taking one bolt after another off a car. At first everything is all right, but eventually the whole car collapses," says Jan Terstad, a member of the Swedish delegation.

Species Disappearing

An average of from five to 10 species disappear every day. In most cases, it happens because their living environments have been devastated, burned, or poisoned. This means that 2,000 species disappear every year.

Researchers calculate that mankind will have eradicated between 30 and 50 percent of the world's species within a 50-year period if the current pace is not slowed. Many species are in danger of disappearing before they are even discovered.

So far, mankind has named just over 3 million species, but it is estimated that there are between 10 million and 40 million species still to be discovered. What this involves mostly are small creeping insects and bacteria.

(Incidentally, it was a lesser woodpecker that DAGENS NYHETER heard during its visit to the alder fen in Bogesundslund and nothing else.)

Government Delays Biodiversity Proposal

93WN0472F Stockholm DAGENS NYHETER
in Swedish 4 Jun 93 p 9

[Article: "Government Supports Biodiversity"]

[Text] (TT)—The government bill on biodiversity is being postponed until this fall. The reason is said to be a lack of time.

On the other hand, the government has decided that Sweden will sign the international convention on biodiversity in October.

The bill was to have been submitted this spring but has been delayed. The latest announcement said that it would be ready in June. But now it has been postponed until this fall, and provisional plans call for submitting it to the Riksdag in October.

"We have submitted several other important government bills this spring, and it has been hard to get one more bill ready by summer," says Johan Bodegard of the Ministry of Environment and Resources, who is in charge of the bill.

He denies that the delay is due to differences of opinion within the coalition government.

"There is quite strong political unity concerning the strategy for preserving biodiversity," says Bodegard. "On the other hand, there are differing views on minor points."

For example, there is uncertainty as to how the protection of sensitive and threatened biotopes will be financed and how agriculture's impact on the environment can be reduced.

The protection of biotopes has already been approved by the Riksdag, so that part of the bill is theoretically ready now. It provides that 11 small biotopes are to be protected from encroachment beginning in 1994. Included, among other things, are cultivated cairns, stone walls,

small islands on agricultural land, certain large trees, alder fens, bog islands, lanes, old hazel groves, willow-tree embankments and springs with their surrounding wetlands, and marshy forests.

Also to be protected following a decision by the county administrative board concerned will be other old plant-rich marshy forests, natural hardwood forests, forest springs, plant-rich alder groves, and marshy forests of high-quality hardwood.

Professor Refutes Biodiversity

93WN0472C Stockholm DAGENS NYHETER
in Swedish 4 Jun 93 p 9

[Article by Erika Bjerstrom: "Impossible To Save All Species"]

[Text] Lund—In order to survive, the human race needs from 10 to 15 agricultural crops and a few domesticated animals. Other species are superfluous.

So claims Torbjorn Fagerstrom, a professor of theoretical ecology. He is critical of the fact that arguments in favor of luxuriant wildlife are being given scientific status.

"The desire to preserve biodiversity is based on emotional arguments, and I support those arguments. A world with only 15 crops would be cheerless in the extreme."

Torbjorn Fagerstrom, who is well known from TV's "Scientist in Lund" program, welcomed us in his office at Lund University.

After some hesitation, he reluctantly explained his criticism of the arguments used by conservationists in their struggle to preserve the abundance of species in nature. His driving force is his desire to defend scientific honesty.

Human Need

"The environmental movement has an apocalyptic view of the environment. Its message is that mankind will die if some strange kinds of spiders die. Parts of the environmental movement make their living from a deep-rooted human need for an apocalyptic outlook," he says, adding that the environmental movement is strongest in the Protestant countries.

In Catholic countries, ecology hardly exists as a science yet. He believes that this is no coincidence.

"Many people think it is wonderful to see a sea eagle or a goshawk. This is apparent from the successful collection of funds by the Society for the Conservation of Nature for its raptor project."

Not Indispensable

"The scientific arguments crop up because people do not dare acknowledge genuinely emotional motives. One such argument is that the eagle is needed to hunt sick animals. It is true that the sea eagle plays a role in the ecological game, but it is not indispensable."

We asked: "But does the lumber industry listen to emotional arguments? Conservationists have started 'imitating' the economists because economic reasons carry weight."

"The spotted owl in the northwestern United States was saved with ethical arguments. The most important thing is that conflicts of interest should be brought into the light and described. Not until then can they be resolved.

"The conflict between hunters and conservationists is a good example. Hunters feel that one must shoot goshawks to keep their numbers from growing too large. Conservationists say they are needed.

"Actually, this is a conflict between people who think it is great fun to shoot goshawks and people who think it is more fun to look at living goshawks."

Preserving every existing species is unrealistic, he feels.

"I am prepared to give full support to the environmental movement from a moral standpoint. Unfortunately, I realize that we cannot save everything. People have an obvious right to use nature. But we must hunt whales and cultivate forests in a sensible manner. For agriculture to lose valuable topsoil because of wrong farming methods is not sensible."

Irreparable Loss

Just over 3,000 species are threatened with extinction in Sweden. If they disappeared, it would be an irreparable loss.

"I take the same view when it comes to human life: No measure is too expensive when it comes to saving species. But in medical care, priorities are set based on limited resources. A doctor in military training must learn which people he should save on the battlefield. And in the same way, we are going to be forced to set priorities when it comes to plant and animal life," he predicts.

It is perfectly possible to operate a humane high-tech society with just a few species that have been selected and bred for our purposes, he claims, adding that the result would be a boring planet.

Single-crop areas such as North America's cornfields are very susceptible to fungus attack.

"For that reason, an embankment covered with wild plants is good insurance. But in the future, molecular biologists will be able to alter corn and produce a resistant crop. The technology will soon exist."

Every species in Sweden immigrated here following the Ice Age. Almost none of them is endemic—that is, occurring only in Sweden. In most cases they are living on the northern limit of their range.

Prof. Arne Jernelov, who wrote a report on biodiversity for the environmental drafting committee, raised the question of whether it is self-evident that threatened species should be kept in existence within Sweden's

borders. It might be more cost-effective to concentrate our efforts on the Baltic states, where the same species are found.

Torbjorn Fagerstrom mentions three arguments for preserving diversity:

"We have a moral duty to manage a natural heritage just as we manage buildings and cemeteries. It would be an admission of extreme poverty to forfeit sources of pleasure and beauty.

"I also believe that every species is potentially useful. We don't know what future generations will want to keep as domesticated animals or plants. Besides, all knowledge is relative. I may say today that the peregrine falcon does not fulfill any function, but I may be wrong. Science does not possess absolute truth."

He shudders every time an environmentalist talks about "the balance of nature" as being a pattern for man and society.

"Underlying the concept of 'ecological balance' is the idea that nature is wise and that what nature does is smarter and better than what man does."

Contradiction

"Those people are talking nonsense. Nature has no objective and no goal; the state of nature is a result of competition among species and their relations with each other. They steal, rape, and kill each other in the struggle for existence. Nature is cruel; it is a struggle without social networks, and the question is whether that is a suitable pattern for us."

He is aware that his argument may harm the environmental movement, which he truly hopes will be successful. But only in the short term, because in the long term, environmental efforts will benefit from the existence of clearer arguments.

"There is a contradiction between what we researchers have come up with and the arguments heard in the political debate, and it is important to overcome that contradiction.

"Another example is the issue of heredity and environment. Homosexuals sometimes claim that homosexuality is hereditary among animals, when the truth is that such animals would quickly be eliminated. Homosexuals should obviously not be denied the right to their choice of a life-style, but it is wrong to legitimize it with arguments based on nature. That they like each other is reason enough."

Torbjorn Fagerstrom's conclusion is that professional researchers do not bother to come out with those uncomfortable facts.

"We have a lot of knowledge that is not in demand. Does that mean it is our responsibility to beat our heads against the wall until they are bloody in an effort to get the word out?"

Third World Efforts To Save Nature

93WN0472D Stockholm DAGENS NYHETER
in Swedish 8 Jun 93 p 10

[Article by Erika Bjerstrom: "Jungle Will Yield a Profit"—introductory paragraph in boldface as published]

[Text] Costa Rica has started charging companies that take plants out of its jungle. Merck & Co., the world's largest drug company, is paying 10 million kronor for the right to conduct research on plants and other organisms. Several tropical countries are following Costa Rica's example. The embryo of a "green OPEC" has developed.

The tropical countries have grown tired of seeing their wild plants and organisms exploited free of charge by drug companies and other firms from the West. Collecting and prospecting for wild plants should carry a price tag just like petroleum, metals, and natural gas, according to their reasoning.

With Costa Rica leading the way, five countries have gotten together and formed the embryo of a "green OPEC." Their model is OPEC, a cooperative organization for petroleum-producing countries that was established to put its member countries in a stronger position for dealing with the oil companies.

The five countries in question—Costa Rica, Kenya, Indonesia, Mexico, and the Philippines—are planning to exchange information and fix the price of wild genetic material as a group.

The countries will hold the patent rights but temporarily assign the rights to their genetic material using lease contracts and cooperation agreements.

A manual on the subject—the first of its kind—was published by the World Resource Institute in the United States a few days ago under the title *Biodiversity Prospecting*. In it countries can find legal advice and examples of how trade agreements might look.

It is no accident that this is happening at this exact moment. The World Bank is predicting a sharp jump in the search for wild genetic material. Health and agriculture are expected to be the big growth industries of the next century, and there will be a big need for new chemicals from plants, mushrooms, and bacteria. Progress in the field of biotechnology means that chemicals can now be found and identified more quickly. Cancer institutes, universities, and firms are ready to go with large-scale research programs.

Important economic interests are involved. The U.S. drug firm Eli Lilly earns 700 million kronor per year from Malaysian *rosenskonan* [translation unknown] which proved to contain a remedy for children's leukemia. The drug industry's sales based on raw materials from the tropics represent a turnover of \$200 billion per year.

Everything Classified

Rodrigo Gamez is head of Inbio (Institute for National Biodiversity) in Costa Rica. It is a small nonprofit institute in which a pioneering activity is being carried on.

All plant and animal species in Costa Rica are to be classified and provided with their own computer bar codes, just like cans of food at the supermarket. They are collected in the wild by barefoot ecologists who have undergone six months of training in taxonomy to learn how to classify animals and plants—58 men and women have gotten jobs in that way. Many of them were previously poor settlers in the rain forest, where they contributed to the devastation. Among others, SIDA [Swedish International Development Authority] has supported Inbio with development assistance money.

As the classification proceeds, Inbio will be able to offer drug firms and other interested parties a "department store" of genetic material. For example, someone looking for a certain chemical may discover, with the help of the computer, that the substance in question is found in a grasshopper living in northwestern Costa Rica.

'Microlivestock'

"A bottle of collected moths used to cost \$25. Now the price is \$1,000 because we have done the hard work of classifying and studying them," says Daniel Janzen, a professor of tropical ecology and one of the fiery spirits behind Inbio. He calls butterflies "microlivestock," which he views as a new kind of crop. The advantage is that this crop can be harvested while allowing the forest to remain.

The institute attracted a great deal of attention at the end of 1991, when it signed a historic contract totaling many millions of dollars with the U.S. drug firm Merck & Co.

For two years Merck & Co. will have free access to the country's wild plants, insects, and micro-organisms. It is paying \$1.3 million and is obligated to pay Inbio a royalty if it develops a commercially viable medicine.

"Half of the money from Merck & Co. went directly into Costa Rica's national park system. Our purpose is not to earn money but to preserve the diversity of plants and animals in our country," DAGENS NYHETER was told by Rodrigo Gamez. The same thing is expressed more formally in the cooperation agreement that Inbio has signed with Costa Rica's Ministry of Natural Resources.

Preserving Diversity

"One of Inbio's goals is to preserve Costa Rica's diversity for all time and to foster its integration with the country's intellectual and economic values through research and the use of plants, animals, and micro-organisms."

Tropical forests are often compared to a library where most of the books remain unread and are in danger of disappearing before species are discovered.

"Inbio constitutes one way of making the library serviceable," says Gamez, who talks about *el bosque util* (the useful forest).

"My dream is to see the forests become as important as the church, the library, the bank, and the school: a source of knowledge and service."

In 1993 Kenya, Indonesia, Mexico, and the Philippines began setting up their own institutes resembling Inbio. Just like Costa Rica, they are dependent upon scientists from the West to help them map out the diversity in their countries.

"We want to learn how to market products from our forests," says Seti Sastrapradja, a scientist and researcher. She is helping to set up a similar structure in Indonesia, although there it is being done by the state.

"We must earn income from the forest if the forest is to survive. Currently 25 percent of the forests are protected, but with 185 million inhabitants, the pressure is tremendous."

Gamez and his colleagues are convinced that all the tropical countries will join eventually. The slogan is "biodiversity, use it or lose it."

"The tropical countries that do not charge will become aware that they are missing out on a source of income," he predicts.

In the short term, Costa Rica is losing out on a few business contacts. Japanese drug firms have turned to Paraguay instead, that being a country where collecting plant material is still almost free.

Reactions to Refutation

93WN0472E Stockholm DAGENS NYHETER
in Swedish 8 Jun 93 p 10

[Article by Erika Bjerstrom: "All Natural Species Have the Right To Exist"]

[Text] "I agree that we cannot preserve every species within Sweden's borders. But Torbjorn Fagerstrom makes the mistake of applying moral arguments to nature," says Stefan Edman, vice president of the Society for the Conservation of Nature.

DAGENS NYHETER has gotten many reactions to its interview with Torbjorn Fagerstrom, a professor of theoretical ecology. He claimed in that interview that the environmental movement was trying to preserve biodiversity on the basis of erroneous scientific arguments. What he urged them to do instead was to dare to stand up for genuine emotional reasons. Fagerstrom also claimed that in the future, we would be able to get along with from 10 to 15 agricultural crops and a few domesticated animals, although the result would be a boring planet.

"How could 10 or 15 crops survive without other organisms that they cooperate with?" asks Stefan Edman, who is also the author of a large number of nature books.

He agrees that Sweden cannot preserve every species.

"On that point we have to be more honest. We also have to have a lumber industry in this country, so we cannot protect every single fungus on every wooded hillside. The main thing is that there should be a vigorous population somewhere. It may also turn out to be a better idea to spend money to save a species in Latvia that is also found here."

He criticizes Fagerstrom for using moral concepts when he says that nature lacks inherent wisdom and that species steal and kill each other in the struggle for existence.

"That is not a scientific argument. I have seen an equal number of examples of symbiosis and cooperation in nature, but his perspective and mine are based on a subjective outlook on life."

Edman agrees that the environmental movement has been careless with the facts in its struggle to save species.

"We need facts combined with fascination. I don't believe we can save biodiversity in the Western world by using economic arguments. We must appeal to people's ethical values—to their respect for nature." Edman, who himself is a Christian, has a typically religious relationship with nature.

"I feel that all species have a right to exist even if they are not profitable."

He sums up the reasons for preserving diversity in four "e's":

Ethical, esthetic ("we do not live by bread alone"), ecological ("we do not know how thin the web of species can become before everything collapses"), and economic.

"The economic arguments are most important in the Third World. It is right that they should charge industries that use their raw materials in the form of plants."

Erik Ahrrenius, an economist who is a well-known participant in the environmental debate, also has an objection.

"The Flash Gordon society outlined by Fagerstrom, with from 10 to 15 species, would work only in a rich high-tech country. In the Third World, it would be an impossibility and the equivalent of certain death."

Study Shows Reduced Auto Emissions

93WN0476A Stockholm DAGENS NYHETER
in Swedish 5 Jun 93 p C 16

[Article by Ola Sigvardsson: "Increased Driving Lowers Catalytic Converter's Effect"]

[Text] The catalytic converter has already produced cleaner air. Calculations of DAGENS NYHETER KONSUMENT from the Environmental Protection Agency's statistics show that the emission of nitric oxide from passenger cars has been lowered by 25 percent.

"Ninety percent cleaner," industry claims.

"Only marginally cleaner, and the gain is eaten up by the fact that we drive more than before," the opponents counter.

Now there is an answer: Both are wrong.

In the broad table shown here you can see the catalytic converter's real effect on the Swedish environment. All the basic material for the calculations came directly from the Environmental Protection Agency. There are statistics on how much we drive, the emission of nitric oxide, and how much of the total distance driven by Swedish cars was accomplished with catalytic converter cars in 1991.

Decision on Lowering

But first a few words on the background: In 1986 there were no catalytic converter cars in Sweden. Therefore we have chosen this year as the starting point for our calculations.

The last year that the Environmental Protection Agency has complete statistics on the emission of nitric oxide, NO_x, was 1991. This was precisely measured because the Riksdag decided that the Swedish emission of NO_x had to be lowered.

NO_x is one of the three gases that the catalytic converter is made to clean up. The others are carbon monoxide and hydrocarbons. There is no corresponding measurement of them.

The table must be read from left to right. The first three figures deal with our driving habits for the year in question. They show that we drove just about 8 percent more in 1991 than in 1986. At the same time, passenger car emission of nitric oxide diminished (see columns 4 and 5). All in all, the reduction was 22 percent (column 6).

The reduction was not more significant because we drove more. If we had just driven the same amount in 1991 as in 1986, the cleanup would have been even greater, 28 percent of the passenger cars fleet's total emission of NO_x (column 7).

This means that our increased driving lowered the catalytic converter's total effect on the car fleet's nitric oxide emission from 28 to 22 percent, that is, 6 percent (column 8).

Mistakes on Both Sides

Therefore the car opponents are wrong. The increased driving did not eat up the effect of the catalytic converter by a long shot.

But of course not all cars had catalytic converters in 1991. No, the Environmental Protection Agency says that only 40 percent of all traffic came from catalytic converter cars (column 9). Thus the question: How much of the cars' nitric oxide emission would have been cleaned up if all cars had had catalytic converters in 1991?

If 40 percent of the catalytic converter cars remove 28 percent of the nitric oxide, then the answer is that if all the cars had had catalytic converters, 70 percent of 1991's nitric oxide would have been cleaned up (column 10).

Therefore the auto industry is also wrong. No cleanup of 90 percent, but actually not so very far from it.

Better Technique

Some time around the turn of the century, almost all cars in Sweden will have catalytic converters. Will the emission then have been reduced by 70 percent compared with 1986?

There are arguments both for and against.

On the one hand, the catalytic converter technique will become better and better. The auto industry will continue its technical development.

On the other hand, in 1991 practically only new cars had catalytic converters. In the year 2000, there will be many

cars on the road with old, only partially effective catalytic converters. This will lower the total effect.

In addition, it is interesting to go a little deeper into the Environmental Protection Agency's statistics on the emission of nitric oxide in 1991.

In the diagram [table] you can see that passenger cars make up the largest part, 23 percent of Sweden's total emission of nitric oxide of 388,000 tons. At the same time, work tools (everything from lawn mowers to harvesters to excavators) made up almost just as much, 20 percent. Then come trucks and buses with almost the same amount, 19.5 percent. Ship traffic lies just beneath with 16 percent.

There is an interesting difference in these categories. The emission from passenger cars is decreasing at a rapid pace thanks to the catalytic converters. The others are generally standing still.

Without minimizing the significance of passenger cars for air pollution, it is proper to ask: In which way can society achieve the most radical improvement of our air, by making further demands on passenger cars or by turning to the completely virginal areas that trucks, buses, work tools, and ships offer.

The Truth About Catalytic Converters

A comparison of nitric oxide emission (NO_x) from all passenger cars in Sweden 1986 and 1991. The first catalytic converter cars came in 1987. In 1989 the catalytic converter became obligatory for new cars. The calculation takes into account that we drove more in 1991 than in 1986

1	2	3	4	5	6	7	8	9	10
Distance driven 1986 in billions kilometers	Distance driven 1991 in billions kilometers	Percentage change of driving distance 1986-91	Emission during 1986 of nitric oxide in tons	Emission during 1991 of nitric oxide in tons	Reduced emission 1986-91	Traffic volume reduction constant 1986-91	Increased emission because of more mileage driven in 1991 than 1986	Total distance driven using catalytic converters in 1991	Reduction of nitric oxide if all cars had had catalytic converters in 1991 (same amount of traffic as 1986)
46.8	50.7	+ 8.3	114,800	89,600	22 percent	28 percent	6 percent	about 40 percent	70 percent

But the passenger car is still the worst criminal. A total of 388,000 tons of nitric oxide was emitted in Sweden in 1991. The emission was distributed as follows (in percent)

Passenger cars	23
Work tools	20
Trucks and buses	19.5
Ships	16
Combustion (heating oil, heating plants, etc.)	6
Various fuels (wood, etc.)	4
Coal, coke	3
Aircraft (civilian)	2
Railway	0.5

Researchers Downplay Greenhouse Effect

93WN0476B Stockholm DAGENS NYHETER
in Swedish 8 Jun 93 p 5

[Article by Gosta Karlsson: "Researchers Want To Tone Down the Greenhouse Effect"—introductory paragraph in boldface as published]

[Text] Much more research is necessary on how climate is affected before one draws the conclusion that human emissions are about to create a destructive greenhouse effect on the earth.

Problems such as overpopulation, emission of disease-producing chemicals, and the rapid consumption of limited fossil fuels are at least as acute, but all together they do not receive attention in the debate.

This is the opinion of the three researchers, Wibjorn Karlen, professor of natural geography at the University of Stockholm, Eigil Friis-Christensen, geophysicist at Denmark's Meteorological Institute, and Bengt Dahlstrom, chief of analysis at the Swedish Meteorological and Hydrological Institute (SMHI) in Norrkoping.

In a report, "The Earth's Climate—Natural Variations and the Human Effect," they say that protective agencies such as the Environmental Protective Agency, the international political establishment, and the mass media have come to too rapid and far-reaching conclusions about present climactic changes on a much too weak factual basis.

Primitive Models

The mathematical models that are used in the supercomputers to calculate the expected temperature rise caused by the human emission of carbon dioxide and other so-called greenhouse gases are certainly very advanced, but at the same time very primitive and uncertain in relation to complicated reality, the report says.

"We must remember that there is a natural greenhouse effect of 150 watts per square meter of the earth's surface, of which 120 watts are caused by water vapor. Without this natural effect, the earth's temperature would be 33 degrees centigrade lower than what it is. The 'magnified greenhouse effect' caused by our emissions that is now being discussed is about 2.5 watts per square meter," Karlen said.

"It is to be sure good that this little increase is being discussed, but too much stress is being put on dramatic effects that we actually cannot speak of with any certainty today. And above all it is seldom remarked that we also emit sulphur compounds and particles that work against an increased radiation of solar energy and that actually take away this increased greenhouse effect."

The authors of the report caution against the investigations on national and global levels that were planned after the world environmental meeting in Rio de Janeiro last year. Measures to reduce carbon dioxide emissions can be faulty undertakings if one does not develop better climate models and more knowledge. "The climactic change that started the debate on the greenhouse effect may turn out to have been caused by natural processes completely beyond human control."

Too Many People on the Earth

At the same time, the three researchers say that, "To be sure, limitations of emissions are obviously a positive move for the earth." What they are against is giving the greenhouse effect too much space among the other global environmental threats. They name among other things the rapid increase in population.

"There are 5.5 billion people on the planet now, and 1 billion more are added each decade. There are perhaps already 2 or 3 billion too many to be able to live in harmony with the planet," Dahlstrom said. "The matter is tremendously sensitive, and it is possibly against the

human being's innermost nature to try to regulate his own reproduction, but we must discuss the problem, and the political systems must in some way take a position on what can be done."

The report on the earth's climate was published by Elfors, the Swedish electric industry's research and development company.

Article Views Problems With Recycling Proposal

93WN0496A Stockholm DAGENS NYHETER
in Swedish 17 Jun 93 p 14

[Article by Bjorn Jerkert: "Chaos Lurking in the Refuse Collection Business"]

[Text] Beginning with the new year, industry and commerce will be responsible for the country's approximately 35 billion pieces of packaging. But they are very confused, as are the municipalities, which do not understand how they are specifically going to implement the minister of environment's vision of a recycling society.

"There is chaos; we do not understand anything anymore, and all planning is at a standstill," says Bengt Jobin of the Industry and Commerce Packaging Council. He is particularly upset over the fact that Olof Johansson himself did not provide any information when he met with the heads of all the municipal refuse collection departments a week or so ago.

Johansson came, gave a speech, and disappeared.

"A disastrous lack of consideration," says Jobin.

Like Jobin, Hakan Rylander, managing director of the Federation of Refuse Collection Plants, approves of the decision that the producers of packaging must also dispose of it, but he, too, wonders how, specifically, the plan is going to be organized in half a year's time.

Short of Time

The municipalities, most of which currently have glass collection systems, will not be able in fact to keep those systems operating in 1994 unless they are requested to do so by industry and commerce.

Half a year later, the producers will also assume responsibility for wastepaper. And the municipalities will not be able to continue handling that responsibility, either, as they have been doing by charging a refuse collection fee. The firms will have to cover the cost by raising the price of their goods.

Jobin believes that consumers will have to pay 3 billion kronor for packaging handled in that way. But no one knows how much more it will add to the price of every piece of milk packaging or every plastic bag which will have to be collected but which is very hard to reuse.

Cost in the Billions

The firms are now debating the question in terms of materials and within their particular industries, but they cannot do much until the decision reached by the

Riksdag a week or so ago is followed by detailed instructions this fall. But those instructions will have to be preceded by consultations with industry and commerce. In addition, the minister of environment is to arrange a yearlong study to determine whether the goals already set by the Riksdag are reasonable.

On the other hand, not until 1997 will the goals and requirements regarding recycling be evaluated and the firms held accountable.

Now environmentalists are worried that firms will adopt cheap but environmentally harmful solutions. They and many municipalities are afraid that the firms will collect refuse only in densely built-up areas, thereby meeting the national goals. For its part, the business community says it is afraid that for financial reasons, the municipalities will be unwilling to take over the activity in question, since they will no longer be responsible for it. The result will be to give large refuse collections firms more or less a monopoly.

The firms and the municipalities should be able to solve this problem of handing over the baton even if the practical details have not been worked out, says Lennart Daleus (Center Party), an expert in the Ministry of Environment. He feels that the firms should move ahead at full speed and be pragmatic and constructive.

Greenpeace Sends Radioactive Sand to Sweden

93WN0496B Stockholm DAGENS NYHETER
in Swedish 18 Jun 93 p 7

[Article by Naljen Stahlstrom: "Environmental Action Forestalled"]

[Text] It was supposed to be a protest action.

The plan was to deliver 80 kg of radioactive sand from Sellafield, England, to the Ministry of Environment in Stockholm.

Greenpeace was the sender.

The sand arrived in Sweden on board the Greenpeace ship Solo. When customs officers boarded the ship late Wednesday evening [16 June], the crew was informed that the sand could not be unloaded until the State Nuclear Power Inspection Board [SKI] and the State Radiation Protection Institute [SSI] had given their permission.

The radioactive sand had been brought from a public beach outside the Sellafield reprocessing plant, where Sweden and other countries have sent their nuclear fuel waste.

Two Laws Involved

"Tests made by us show that radioactive radiation in the sand is 50 times higher than the background radiation," says Simon Carroll of Greenpeace.

The SKI and SSI held talks with each other all day Wednesday to decide how the sand would be handled.

"The sand contains very low levels of plutonium, and we must decide whether an import permit is required," says Lars Hogberg of the SKI.

Two different laws govern that decision: the Nuclear Technology Law and the Radiation Protection Law.

In the early 1980s, Sweden sent 140 metric tons of spent nuclear fuel from the Oskarshamn nuclear power plant to Sellafield in England, where it has been stored pending completion of the new Thorp reprocessing plant.

Recovery

The process involves separating plutonium and uranium from the spent nuclear fuel so that, in theory, they can be reused as fuel.

"The purpose of our action is to confront the countries that send their nuclear fuel waste to Sellafield. They are jointly responsible for the increased release of radioactive substances that is occurring in Sellafield," says Simon Carroll of Greenpeace.

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